PARADYME™

Ag Leader® Technology

Ag Leader PN 4002139 Rev G

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# PARADYME

## LEGAL DISCLAIMER

Notes:

- Read and follow ALL instructions carefully before installing or operating the AutoSteer system.
- Take careful note of the information in the Safety Requirements section.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

**1.** There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.

**2.** During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle's wheels turn from side to side and the vehicle moves. Be sure that all people and obstacles are clear of the vehicle before installation, calibration and tuning, or use of the AutoSteer system.

**3.** Use of the AutoSteer system is NOT permitted while equipment is on roads or in public areas. Follow the instructions set forth below for ensuring that the system is OFF before driving on roads or in public areas.

### Important Information

Refer to your hardware installation manual for complete installation requirements before you start your system.

## INTRODUCTION

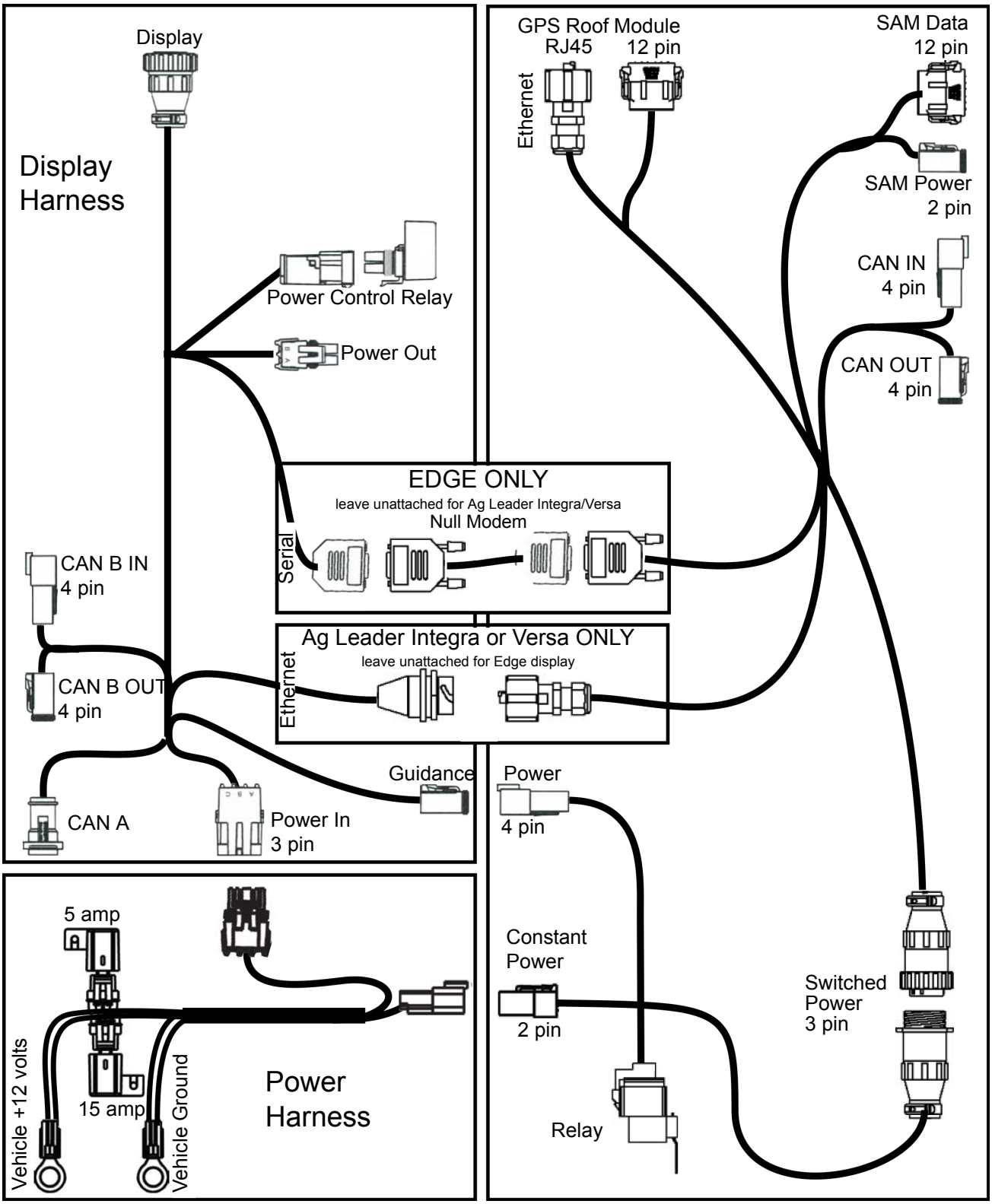
The ParaDyme system is a GPS and control system. It is at the heart of a full-featured precision agriculture product and a vital element of an agriculture data management system. It is a precision machine control and ease-of-use system that is a vital part of an integrated farm management system.

A few qualities of your ParaDyme system are:

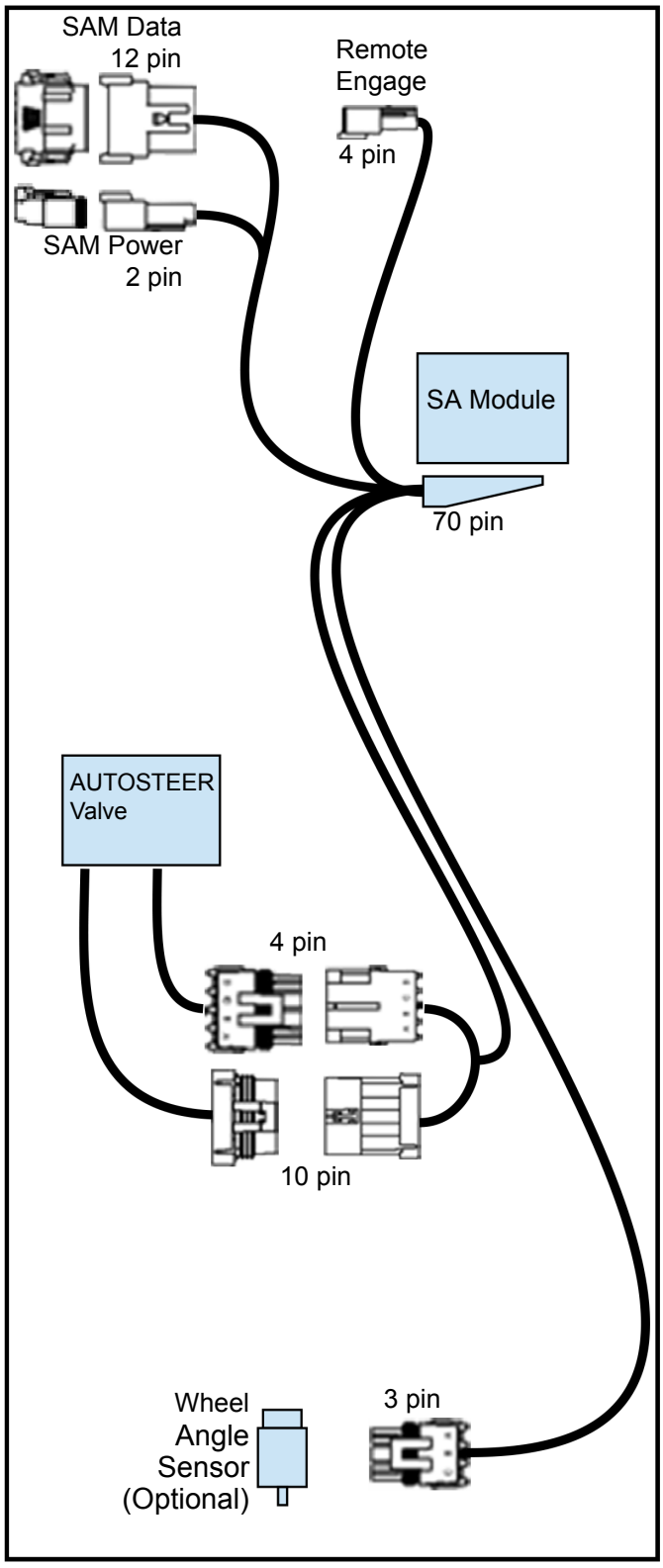
- Intuitive Operation.
- Scalable GPS accuracies that cover North America, Australia and Europe. Hassle-free local corrections (for repeatability).
- Scalable local correction sources with both 900MHz, 450MHz and cellular link options.
- Affordable; designed to provide more affordable performance steering.
- Full-featured; higher-end configurations offers a competitive menu of precision agriculture for autosteering.
- Reliable; Two-way communications for diagnostics and software updates via cellular modem, or USB storage device (user preference).

The following chapters explain how to perform the necessary tasks to enable your steering system. The chapters feature descriptions of how to use the software to make your GPS a productive part of your operation.

# Display Harness Diagram



# Steering Harness Diagram



# Safety and Regulatory Requirements

This Safety and Regulatory Requirements chapter provides information for the safe operation of the ParaDyme system and for meeting regulatory compliancy. The ParaDyme system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following requirements:

- The ParaDyme system must be operated by a trained and qualified operator.
- The operator must never leave the vehicle while the ParaDyme system is engaged.
- The ParaDyme system is not designed to replace the vehicle operator.
- The ParaDyme system does not detect obstacles in the vehicle path.
- When engaged, the ParaDyme system controls only the steering of the vehicle. The operator must control the speed of the vehicle.
- The ParaDyme system should be turned off or disengaged when driving on public roads or anywhere other than a farm field.
- Turn the ParaDyme system off or disengage when making adjustments to or changing towed or hitched implements.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 kph).

## FCC Requirements

When operating in the United States, FCC licenses are required for AFLink radios.

This device is intended for use in the operation of commercial activities, educational, philanthropic, or ecclesiastical institutions, and hospitals, clinics, or medical associations.

The Federal Communications Commission (FCC) requires you to have a license before you operate this device. Unless you are already licensed to operate on one of the preset frequencies, you must apply for a frequency through the PCIA (Personal Communication Industry Association), a non-profit organization that assigns frequencies nationwide to help prevent conflicts between different businesses using devices. In the same area. For more information about getting a license, contact the PCIA at 800-759-0300, extension 3068 (in Virginia 703-739-0300, extension 3068).

For other questions concerning the license application, contact the FCC at 717-337-1212, or write: FCC

P.O. Box 1040

Gettysburg, PA 17325

For the latest FCC application form and instructions, call the FCC's fax-on demand service at 1-202-418-0177 from a fax machine and request one or more of the following documents:

All forms and instructions 000600

If you do not have a fax machine, you can call the Government Forms Distribution Center at 1-800-418-FORM and request that the form and instructions be mailed to you.

## European Requirements

When operating the ParaDyme system in Europe, contact your dealer to determine if additional licensing is required.

# Regulatory Information

The 802.11 b/g Radio module is installed in close proximity to other radio modules. This device complies with Part 15 of the FCC Rules. This device shall be professionally installed and maintained by a trained technician as directed by FCC regulations. Use of an antenna other than that outlined in the FCC and IC certification filings for each of the radio products may violate FCC regulations. This device operation is subject to the following two conditions:

1. It may not cause harmful interference.
2. It must accept any interference received, including interference that may cause undesired operation.

| Manufacturer | Description | FCC ID (EUROPE/CANADA IC) |
|---|---|---|
| Novariant | 802.11 b/g Radio | TMN-WMIA-166AGI (8490A-WMIA-166AGI) |
| Multi-Tech[1] | CDMA MMC Modem | AU792A04A22750 (125A-0010) |
| Novariant[2] | 900 MHz FHSS Radio | KNY-6231812519 (2329B-DGR09RAS) |
| Intelligent Wireless1 Products Inc | CDMA Single Channel RF Amplifier | RFK-LMSWDJH819 (5252A-CA819) |
| TELIT | Tri-Band UMTS/HSDPA Quad Band GSM Modem | R17UC864G (5131A-UC864G) [CE 0984] |
| SATEL | Modem Receiver 403-470 MHz | MRB-SATELTA10 (2422A-SATELTA10) [CE 0523] |

[1]The Multitech radio drives the Intelligent Wireless Products amplifier and is used only in CDMA mode.

[2]Whenever any Novariant Radio Module is mounted inside an enclosure, the enclosure must have a visual label on the outside featuring the module FCC ID.

# RF Exposure Information

***CAUTION:*** This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

***CAUTION:*** FCC RF Exposure Requirements Configuration 1 antenna must be mounted at least 26.6 cm away from nearby persons to comply to FCC RF exposure requirements.

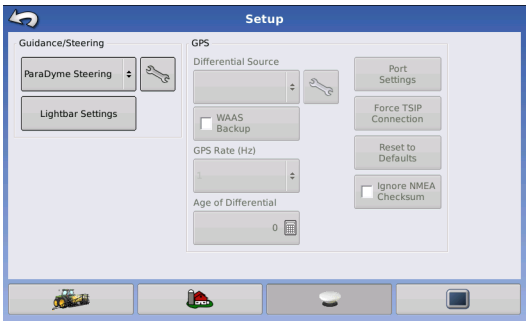
***Note:*** Configurations using radio modules not described above or which use antennas not qualified for the radio modules above require further equipment authorization.

# Accessing the AutoSteer Setup Screen

## From Ag Leader Integra or Versa

1. Go to the Home Screen and press the Setup (wrench) button.

2. Press the GPS Setup button, as shown at left, and the GPS Setup Screen appears, as shown below.




**3.** Under the **Guidance/Steering** drop-down menu, select **ParaDyme Steering**.

**4.** The Liability Notice appears. Press the green check mark button to accept.

**5.** Press the Setup (wrench) button on the Setup Screen to begin ParaDyme operations.

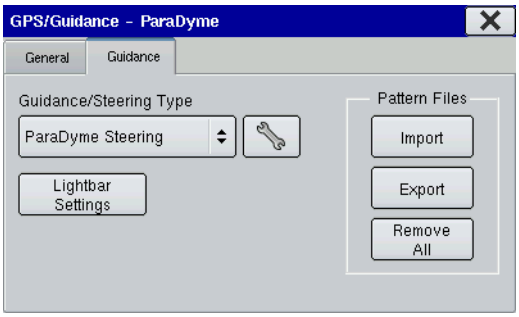
***Note:*** *In order for the User Display's Run Time Environment to be active, you must complete the initial configuration steps as described in the Setup chapter of your display's User Manual.*

## From EDGE Display

**1.** From the Home Screen, press the Setup (wrench) button to open the Setup screen.

**2.** At the Setup Screen, press the GPS Guidance icon, as shown at left.

**3.** Navigate to the Guidance Tab, as shown below.




**4.** Underneath the **Guidance/Steering Type** drop-down menu, select **ParaDyme Steering**.

**5.** The Liability Notice appears. Press the green check mark button to accept.

**6.** Press the Setup (wrench) button to begin ParaDyme operations.

***Note:*** *In order for the User Display's Run Time Environment to be active, you must complete the initial configuration steps as described in the Setup chapter of your display's User Manual.*

***Note:*** In order for the User Display's Run Time Environment to be active, you must complete the initial configuration steps as described in the Setup chapter.

# INITIAL SETUP

The steps listed below give an overview of procedures that must be successfully completed in order to ensure proper ParaDyme system operation. See *"Using the Vehicle Menu" on page 12* for details.

**1.** Configure the radio channel to match your Base Station and configure your GPS options. See *"Using the GPS Menu" on page 37*.

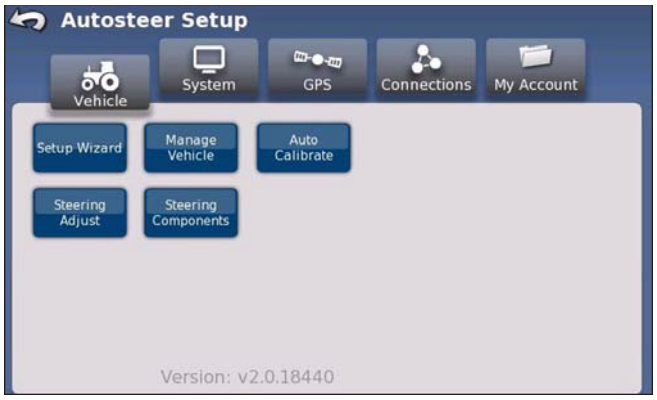
**2.** Create a new vehicle. See *"Setup Wizard" on page 13.*

**3.** Calibrate the vehicle using the Calibration Wizard. See *"Auto Calibrate" on page 20.*

**4.** The system will perform a GPS survey, and then the vehicle will be ready to AutoSteer.

• If your job requires an accurate latitude and longitude position, or the ability to repeat or continue a saved job (Autosteer over the same guidance paths), refer to your Base Station Hardware Manual for additional information and instructions.

## AutoSteer Setup Screen Overview




The ParaDyme AutoSteer Setup Screen is accessed from your display. Refer to your display's User Manual for details.

• The **Vehicle** menu enables you to configure a vehicle, set up a new vehicle, manage existing vehicles, perform the auto calibration of a vehicle, perform the steering adjustments and manage steering components.

• The **System** menu enables you to configure and monitor system parameters.

• The **GPS** menu provides procedures and detailed information for selecting and configuring your GPS correction source and radio options.

• The **Connections** menu enables you to configure and monitor communication parameters.

• The **My Account** menu enables you to configure and monitor account parameters.

• To return to the previous screen, press the Back icon. Press the Back icon from the AutoSteer Setup screen to return to your main application.

## Base Station

If you use a base station, refer to your base station hardware manual for installation and operation instructions.

## LED Status

Table 3-1 defines the status of the system as shown by the LEDs color configuration.

Table 3-1LED Status.

| LED | Power Off | Booting | Software Ready | Position Fix | Hardware Connections | Software Loading | Software Restart |
|---|---|---|---|---|---|---|---|
| 1 | Off | Orange/ Yellow | Green | Flashing Green indicates RTK signals are being received. | N/A | Flashing Orange/ Yellow | Orange/ Yellow or Flashing Orange/ Yellow |
| 2 | Off | Orange/ Yellow | Green | Flashing Green indicates the number of satellites tracked on the left antenna. | Slow Orange/Yellow flash indicates that no Display is detected. | N/A | N/A |
| 3 | Off | Orange/ Yellow | Green | Flashing Green indicates the number of satellites tracked on the right antenna. | Slow Orange/Yellow flash indicates that no SA Module/ECU is detected. | N/A | N/A |

## GPS Corrections

GPS corrections are required to acquire and maintain an accurate position for your vehicle. Table 3-2 and Table 3-3 provide comparisons of typically available GPS corrections. Factors such as, accuracy requirements, repeatability and available correction sources should be considered when choosing a correction source. GPS corrections are obtained via connection types including NTRIP, an Internal Radio, or your ParaDyme Roof Module GPS receiver.

***Note:*** For more information on correction sources and connection types, see *"Using the GPS Menu" on page 37*.

Table 3-2Correction Source Specifications.

| Correction Source | Connection Type | Advantages |
|---|---|---|
| RTK | NTRIP, Internal Radio, External Radio | High Accuracy Level, Repeatability |
| OmniSTAR HP | ParaDyme Roof Module GPS Receiver | Real time without the need for local Base Stations |
| OmniSTAR XP | ParaDyme Roof Module GPS Receiver | Real-time differential GPS corrections without the need for local Base Stations. Lower cost that OmniSTAR HP. |
| WAAS | ParaDyme Roof Module GPS Receiver | Real-time accurate positioning information |

# Using the Vehicle Menu

## Accessing the Vehicle Menu

To access the **Vehicle** menu:

1. Start the display.

***Note:*** Before using your ParaDyme system with the OnTrac2 option, turn on the MDU2 power switch prior to operating your vehicle.

2. Access the ParaDyme application. (See your display's User Manual for details.)
3. Press the **Vehicle** button from the **AutoSteer Setup** screen.

4. Select the desired vehicle configuration procedure button:

- **Setup Wizard**

Enables you to create and calibrate a new vehicle.

- **Manage Vehicle**

Enables you to oversee and modify the information relative to the selected vehicle.

- **Auto Calibrate**

Starts a series of calibration steps that are critical to achieve optimal autosteering.

- **Steering Adjust**

Enables you to change the way your vehicle steering performs.

- **Steering Components**

Enable you to adjust various parameters of steering components, such as the manual steering override kickout limit, and view diagnostic information for system components.

# SETUP WIZARD

The Setup Wizard is used to create, calibrate and tune your vehicles with the Paradyme system and ensures that all required steps are performed. To achieve the best possible steering accuracy with the ParaDyme system you must create a vehicle, calibrate and then tune the system for your specific vehicle.

***Note:*** Active Vehicle means the vehicle being used for autosteering operations.

## Initial Create Vehicle Procedure (First Time Use)

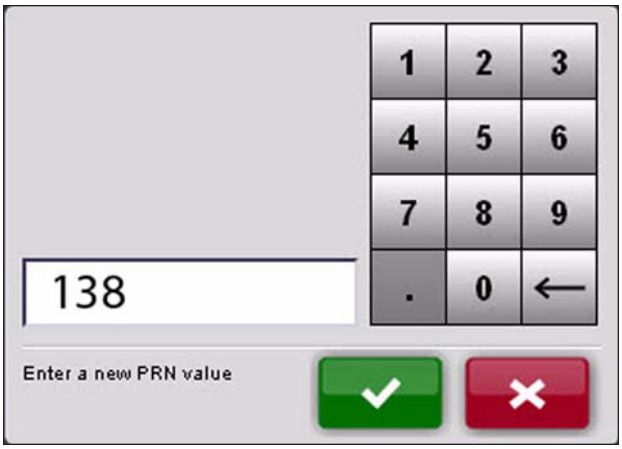
The initial (first ever) setup wizard leads you through a series of parameter settings before you access the standard vehicle setup screens. Once the initial vehicle has been setup, pressing the **Setup Wizard** button brings you directly to the standard vehicle setup screens. (See the *"Standard Create Vehicle Procedure" on page 14*.)

***Note:*** The Initial Create Vehicle Procedure is also used after a database reset.

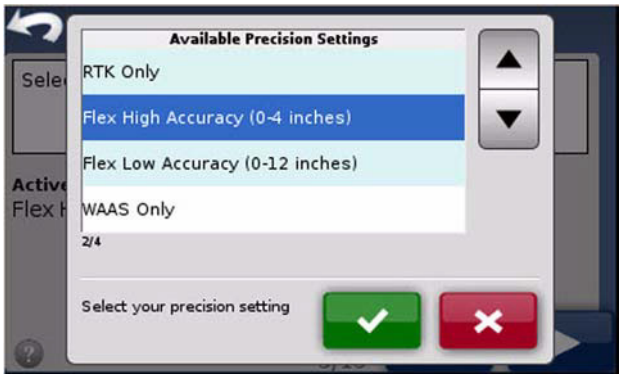
To create the first vehicle for the first time use of the system:

1. Press the **Setup Wizard** button. the GPS Setup screen appears.
2. Press the **Change Primary** button. The Enter PRN screen appears.

***Note:*** PRNs are satellite identifiers. Enter the primary satellite PRN to use for WAAS correction. For the US WAAS, try PRN 133 first, then PRN 138. If the signal is weak, consult the FAA web site, or contact your dealer for updates.




3. Use the keypad to type a PRN number and press the check mark button.
4. Depending on the optional radio hardware installed on your system, the wizard guides you through the necessary configuration steps. When finished, the Precision Settings Info screen appears.
5. Press the **Change Mode** button. The Available Precision Settings screen appears.




6. Select a precision setting and press the check mark button to automatically move on to the Standard Create Vehicle Procedure. There are five precision settings available:

- RTK Only
- Flex High Accuracy (0 - 4 inches)
- Flex Low Accuracy (0 - 12 inches)
- OmniSTAR Only
- WAAS Only

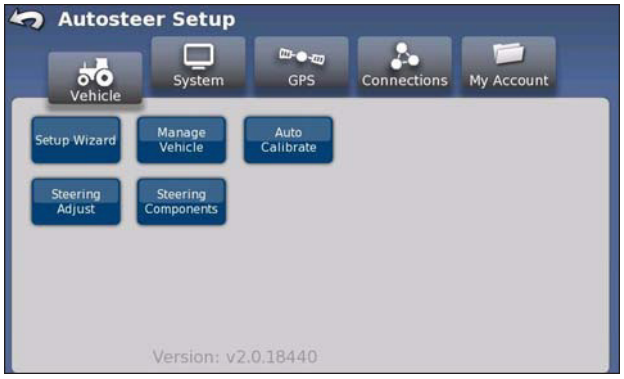
***Note:*** See the Precision Settings section of *"Using the GPS Menu" on page 37* for details about precision settings.

## Standard Create Vehicle Procedure

Once the initial vehicle has been setup, pressing the **Setup Wizard** button brings you directly to the standard vehicle setup screens.

To create a vehicle after first time use of the system:

***Note:*** The following procedure uses a common vehicle type, but the actual steps and images displayed on your screen will vary according to the type of vehicle you selected.




**1.** From the Vehicle menu, press the **Setup Wizard** button. The Vehicle Type list appears.

**2.** Using the up and down arrows, select the appropriate vehicle type and press the Right Arrow button. The Vehicle Make list appears.

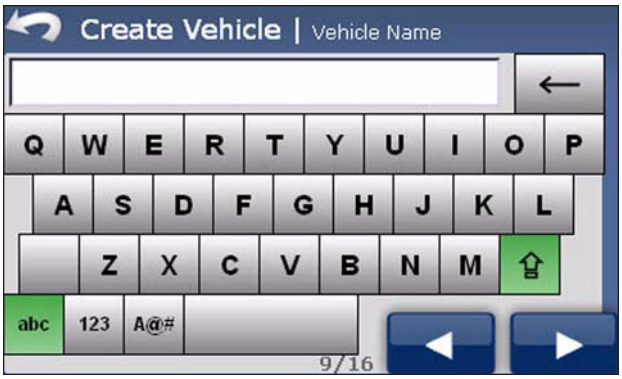
***Note:*** The list of vehicle types available on your system may not match those shown here. If your vehicle is not on the list, pick the vehicle closest to your vehicle type or choose the generic option.

**3.** Use the up and down arrows to select your vehicle make and press the Right Arrow button. The Vehicle Model list appears.

**4.** Use the up and down arrows to select your vehicle model and press the Right Arrow button. The Vehicle Controller Type list appears.

**5.** Use the up and down arrows to select your vehicle controller type and press the Right Arrow button. The Vehicle Name screen appears.

***Note:*** OT2 is an acronym for the OnTrac2 control system. If you are using an OnTrac2 controller the screens and options will be slightly different.

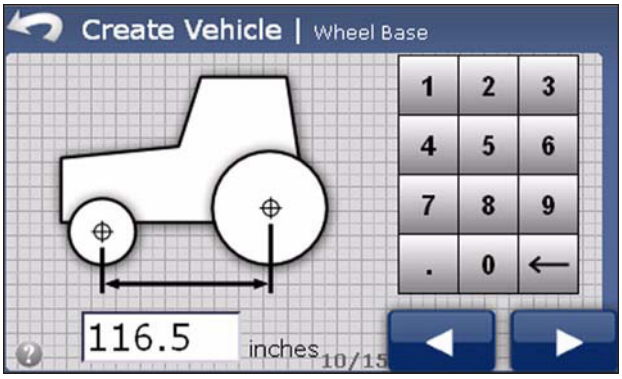



**6.** Enter a name for the vehicle and then press the Right Arrow button. The Wheel Angle Sensor dialog box appears.

**7.** Press the appropriate button. The Wheel Angle Sensor screen appears.

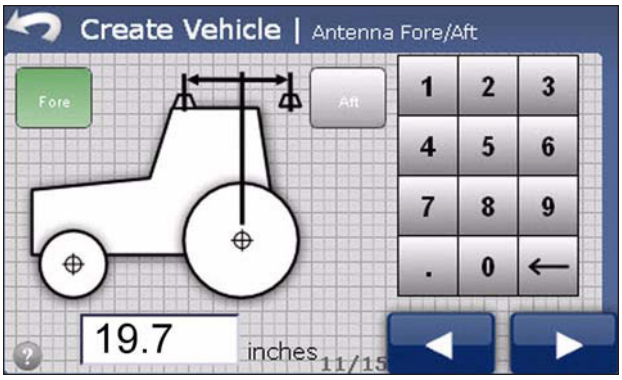
***Note:*** The Wheel Angle Sensor is optional equipment that may not be required on your vehicle.

***Note:*** If the Wheel Angle Sensor option is changed after AutoCal is completed, the AutoCal must be redone.




**8.** Enter the Wheel Base value using the numeric keypad. Press the Right Arrow button. The Antenna Fore/Aft screen appears.

***Note:*** The choice of units of measurement is made in the display's Console Setup General Tab.




**9.** Enter the Antenna Fore/Aft value using the numeric keypad, and then press the Fore or the Aft button as applicable to your installation. When finished, press the Right Arrow button. The Antenna Lateral Offset screen appears.

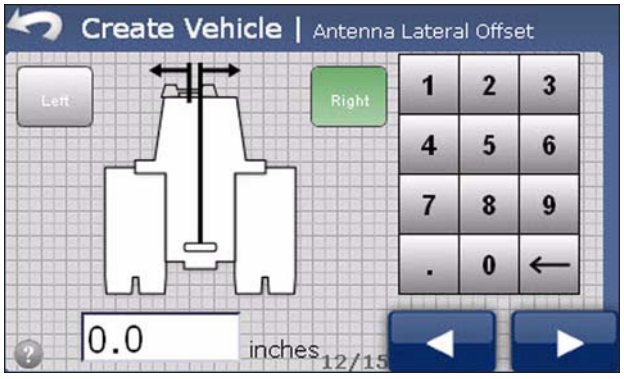
• Fore indicates the antenna is located in front of the vehicle's control point.

• Aft indicates the antenna is located behind the vehicle's control point.

• The Control Point of a vehicle is defined as:
  - Standard Wheeled Vehicle - Rear Axle
  - Track Vehicle - Center of tracks
  - Articulated Tractor - Pivot point of vehicle

- Combine/Swather - Front Axle

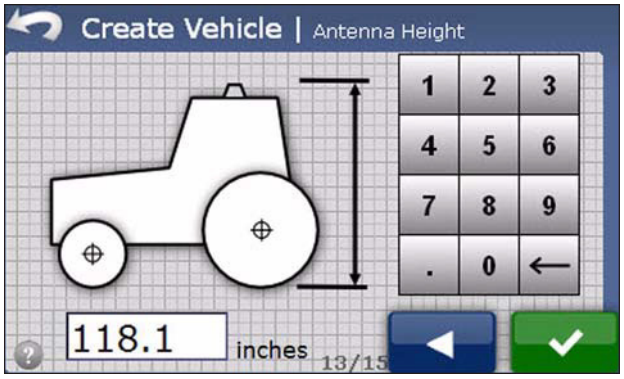
***Note:*** Be sure to select the appropriate offset for your configuration by pressing the Fore or Aft button.




**10.** Enter the Antenna Lateral Offset value using the numeric keypad and then select the Left Arrow or Right Arrow button as applicable to your installation. When finished, press the Right Arrow button. The Antenna Height screen appears.

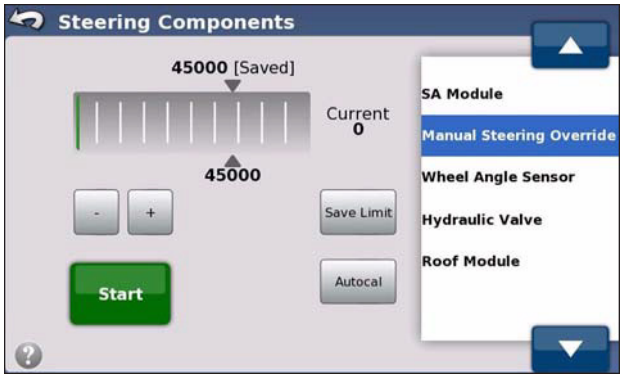
***Note:*** The Antenna Lateral Offset value is tested and adjusted (if necessary) after vehicle creation and calibration is complete. See *"Adjust Lateral Offset" on page 23*. The Left Arrow and Right Arrow buttons define the antenna position (center of the Roof Module) relative to the vehicle's center line when viewed from the rear.

Be sure to select the appropriate offset for your configuration by pressing the Left Arrow or Right Arrow button.




**11.** Enter the Antenna Height value using the numeric keypad and then press the check mark button. The Manual Steering Override screen appears.

***Note:*** Antenna height is measured from the antenna ground plane bottom to the ground surface.




**12.** You are now in the Manual Steering Override kickout limit setting procedure. See *"Manual Steering Override (Autosteering Kick-out Limit Adjustment)" on page 26* for details about the procedure.

**13.** When the Manual Steering Override calibration is complete, the Setup Wizard starts the Auto Calibrate procedure. See *"Auto Calibrate" on page 20.*

# MANAGE VEHICLE

The Manage Vehicle screen enables you to manage and edit vehicles and vehicle settings. The Manage Vehicle screen has three options:

- The **Select** button enables you to select the vehicle you will be using for your autosteering operations.
- The **Edit** button enables you to make changes to the vehicle parameters you select from the scrolling list.
- The **Delete** button enables you to delete the vehicle you select from the scrolling list.

## Select the Active Vehicle

The **Select** button enables you to select the vehicle you will be using for your autosteering operations. To select the active vehicle:

**1.** Press the **Manage Vehicle** button. The Manage Vehicle screen appears.

**2.** Using the Up and Down arrows from the scrolling list, select the vehicle you want to use for your autosteer operations and press the **Select** button.

**3.** The active vehicle confirmation dialog box appears. Press the check mark button and then press the Home icon to get back to the **AutoSteer Setup** menu.

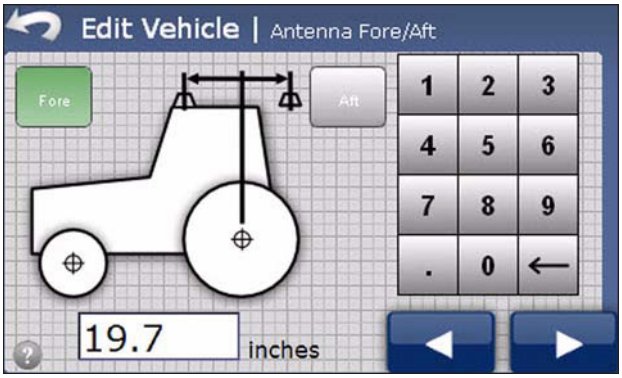
## Edit Vehicle

The **Edit** button enables you to make changes to the parameters of the vehicle you select from the scrolling list. To edit a vehicle:

**1.** Press the **Manage Vehicle** button. The Manage Vehicle screen appears.

**2.** Using the up and down arrows, select the vehicle from the list and press the **Edit** button. The Wheel Base screen appears.

**3.** Enter the Wheel Base value using the numeric keypad, and then press the Right Arrow button. The Antenna Fore/Aft screen appears.




**4.** Enter the Antenna Fore/Aft value using the numeric keypad and then press the Fore or the Aft button as applicable to your installation, and then press the Right Arrow button. The Antenna Lateral Offset screen appears.

***Note:***

Fore – indicates the antenna is located in front of the vehicle's control point.

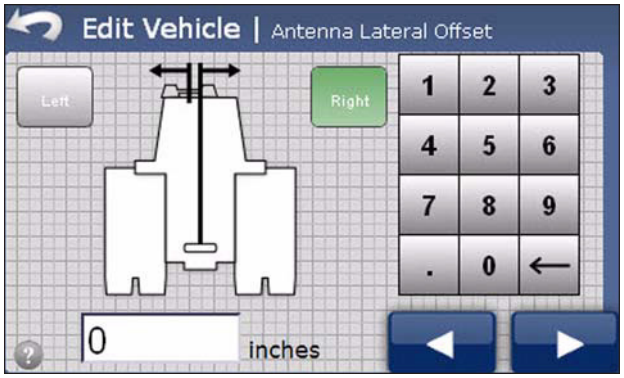
Aft – indicates the antenna is located behind the vehicle's control point.

***Note:***

The Control Point of a vehicle is defined as:

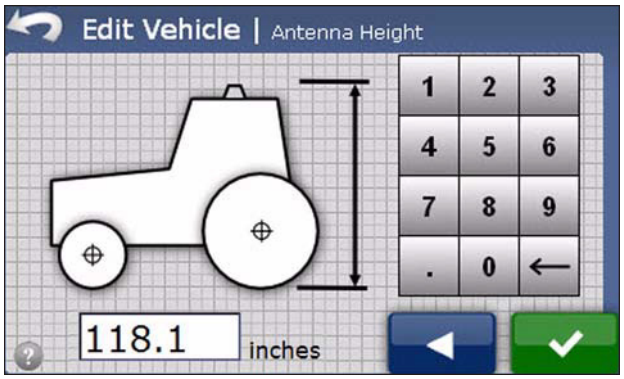
- Standard Wheeled Vehicle – Rear Axle
- Track Vehicle – Center of tracks
- Articulated Tractor – Pivot point of vehicle
- Combine/Swather – Front Axle

***Note:*** Ensure you select the appropriate offset for your configuration by selecting the Fore or Aft button.




**5.** Enter the Antenna Lateral Offset value using the numeric keypad and then select the Left Arrow or Right Arrow button as applicable to your installation.

***Note:*** The Left Arrow and Right Arrow buttons define the antenna position (center of Roof Module) relative to the vehicle center line when viewed from the vehicle rear. Select the appropriate offset for your configuration. Press the Right Arrow button to proceed to the next Edit Vehicle step after you have entered your antenna offset.




**6.** The Antenna Height screen appears. Enter the Antenna Height value using the numeric keypad and then press the check mark button.

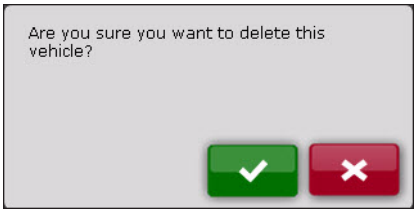
***Note:*** Antenna height is measured from the antenna ground plane bottom to the ground surface.

**7.** The Save vehicle dialog box appears. If you are satisfied with the changes you made, press the check mark button.

***Note:*** If you are not satisfied with the changes and further edits are necessary, press the X button to return to the Wizard. If you choose X, the previously entered settings are not saved and the Manage Vehicle screen appears.

## Delete Vehicle

The Delete button enables you to delete the vehicle you select from the scrolling list. To delete a vehicle:




**1.** From the Manage Vehicle screen, select the vehicle you wish to delete from the list and press Delete. The delete vehicle dialog box appears. Press the check mark button to delete the vehicle. The deletion success dialog box appears.

***Note:*** If you don't want to delete the vehicle press the X button to return to the Manage Vehicles screen.

***Note:*** You can not delete the active vehicle.

**2.** Press the check mark button to return to the Manage Vehicles screen.

# AUTO CALIBRATE

The Auto Calibrate procedure takes the vehicle through a series of calibration steps that are critical to achieve optimal autosteering. You can pause the calibration at any point during the process.

***Note:*** The Auto Calibrate procedure takes a significant amount of space for your vehicle to operate within. Depending upon your vehicle size you may need as much room as a football field in order to complete the Auto Calibrate procedure.

***Note:*** The vehicle will execute a series of maneuvers during the calibration process including turning full left and full right.

The wizard provides specific values about area, speed, and RPM. The calibration steps and time vary according to vehicle type and equipment installed. Follow the onscreen instructions to do the auto calibration procedure.

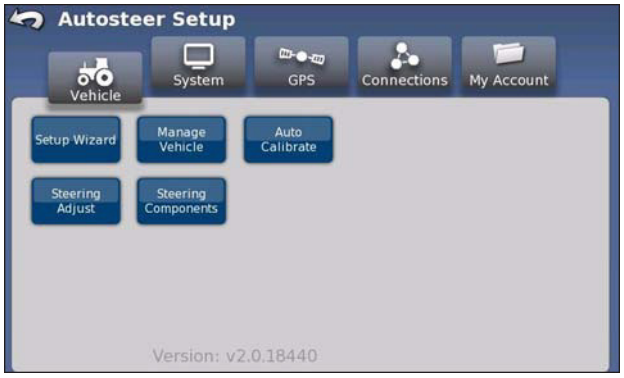
The main steps of the calibration procedure are:

- Valve Deadband calibration: The deadband is the range of voltages sent to the control valve that result in no turning of the wheels. The system commands the valve to a series of positions to determine the deadband.

- Wheel Angle Sensor calibration: The system sends a series of commands to receive Wheel Angle Sensor data and ensure calibration.
- Valve fine calibration: The purpose of the valve and actuator fine calibration is to determine the control characteristics of the hydraulic control valve. The values are then used by the system to steer the vehicle.
- Calibration Verification: The system measures and records calibration data.

***Note:*** Both the hydraulic valve and actuator and Wheel Angle Sensor (only if installed) are calibrated during the automated calibration routine. All steps of the routine must be completed and the changes saved before any attempt is made to autosteer the vehicle.

***Note:*** You can press Pause and Resume (or manually turn the steering wheel) at any time during the Auto Calibrate procedure if needed.

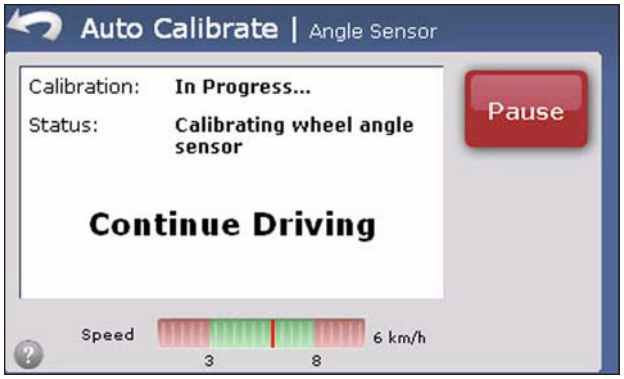



**1.** Press the **Auto Calibrate** button from the AutoSteer Setup screen. The Auto Calibrate Introduction dialog box appears.

**2.** Press the Right Arrow button. The Valve Deadband Auto Calibrate dialog box appears.

**3.** Press the **Start** button to start the calibration of the valve.

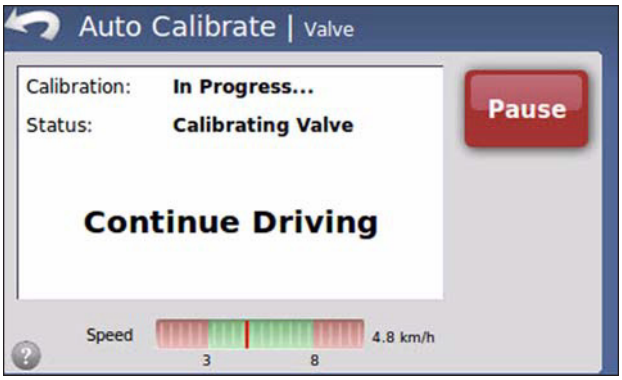
***Note:*** Your vehicle must be running between 1.6 mph (3 kph) and 5 mph (8 kph) before you start the Auto Calibrate procedure.




**4.** When the system is done with the Valve Deadband calibration, the Wheel Angle Sensor calibration procedure begins.

The system sends a series of commands to receive Wheel Angle Sensor data and ensure calibration.

***Note:*** The vehicle will execute a series of maneuvers during the calibration process, which may include turning full left and full right.

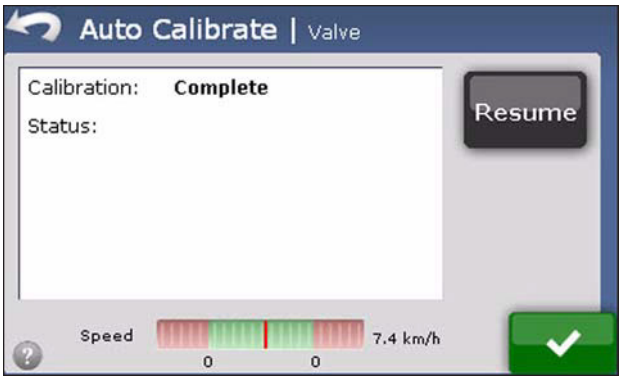



**5.** When the system is done with the Wheel Angle Sensor calibration, the Valve calibration procedure begins. In this procedure the system sends a series of commands to the hydraulic actuator to test its response:

• First, the system measures the maximum speed (sweep rate) that the wheels turn.

• Second, the system calibrates the actuator.

***Note:*** In this procedure, the vehicle goes rapidly from full left to full right and back multiple times. Next, it goes slowly from left to right and back.

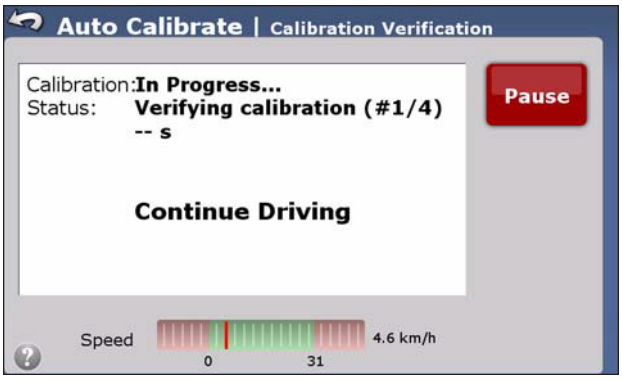



**6.** When the system is done with the Valve calibration, the Calibration Complete screen appears. Press the check mark button to save the calibration data to the database and begin the Calibration Verification procedure. The Calibration Verification Introduction screen appears.

**7.** Press the **Resume** (Start) button to begin the Calibration Verification process.

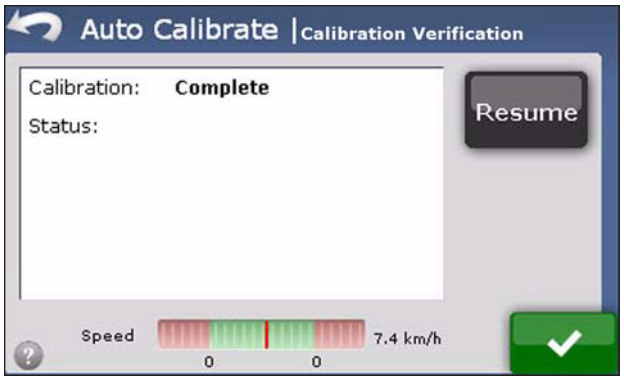
***Note:*** Your vehicle should be moving at normal operating speed before you begin the Calibration Verification process.

***Note:*** The vehicle will execute a series of maneuvers during the Calibration Verification process including driving in a straight line and slight left and right turns.




**8.** The ParaDyme system begins the Calibration Verification process. A series of screens appear displaying calibration status and providing prompts for the vehicle operator. Follow the on-screen prompts to complete the calibration.

***Note:*** You can press Pause and Resume (or manually turn the steering wheel) at any time during the Calibration Verification procedure if needed to ensure safe vehicle operation. However, the timer for the current step is reset each time you press the **Pause** button.




**9.** When the Calibration Verification procedure is complete, the Calibration Verification Complete screen appears. Press the check mark button to return to the Vehicle screen.

**10.** After the vehicle has been calibrated and verified, you must confirm the accuracy of the lateral offset valve. See *"Adjust Lateral Offset" on page 23.*

## Adjust Lateral Offset

After the vehicle has been created and calibrated, perform the following procedure to ensure that the lateral offset is entered correctly. This procedure will detect and eliminate skips and overlaps in adjacent rows due to an incorrect lateral offset.

***Note:*** Before beginning this procedure, the Lateral Offset value should be as close to 0 as possible. If the value is off by more than 4", this procedure will be ineffective.

**1.** Set an AB line, engage autosteering, and autosteer for at least 25 yards.

**2.** Stop your vehicle, place it in park, and turn off the ParaDyme system. Use a plumb bob to place a flag in the ground directly beneath the center of the draw bar.

**3.** Return to the vehicle, start the ParaDyme system, and engage autosteer for at least 25 more yards on the same AB line.

**4.** Disengage autosteer, turn the vehicle around, and begin autosteering back down the same AB line in the opposite direction.

**5.** When the vehicle's draw bar reaches the flag, stop the vehicle, place it in park, turn off the AutoSteer system, and exit the vehicle.

**6.** Check to see if the center of the draw bar is over the flag.

**7.** If the flag is exactly beneath the center of the draw bar, no adjustment is needed.

**8.** If not, use a plumb bob to mark the spot directly beneath the draw bar, and then measure the distance between that spot and the flag.

**9.** Divide the measured distance by 2. (The measurement is divided by two because taking the measurements driving in opposite directions doubles any error.)

**10.** Go to the Edit Vehicle>Antenna Lateral Offset screen (see *"Edit Vehicle" on page 18*) and subtract the measured distance (divided by 2) from the current value.

***Note:*** This measurement may require you to select a different left/right offset direction.

**11.** Repeat the procedure to ensure that the lateral offset is now correct. Example:

After autosteering up and down the AB line, the center of the draw bar is 4 inches to the right of the flag. Divide the measurement by 2, which gives you an adjustment of 2 inches. Go to the Antenna lateral

offset screen and adjust the lateral offset 2 inches to the left (the adjustment must be made in the opposite direction of the error).

***Note:*** You may need to change the left/right offset direction to account for the adjustment.

# STEERING ADJUST

The Steering Adjust screen enables you to adjust your vehicle steering performance. You can change the response of the selected item by using the slider bar.

The Steering Adjust scrolling list contains the following items:

- Steering Response controls the oscillations of the vehicle when it is on the desired path.
- Cross-Track Error adjusts how aggressively the vehicle reacts to changes in cross-track error.
- Reverse Response defines how well the vehicle steers when it is on the desired path, but in reverse.
- Line Acquisition determines how aggressively the system steers onto the desired steering path. The goal here is to tune the system to take the shortest route without excessively sharp or sudden movements of the vehicle.

## Steering Adjust Screen

The Steering Adjust screen enables you to improve your vehicle autosteering performance. You can change the response rate of the selected item with the screen slide bar:

- The turtle icon indicates slower (smooth) response.
- The rabbit icon indicates faster (aggressive) response.

# STEERING COMPONENTS

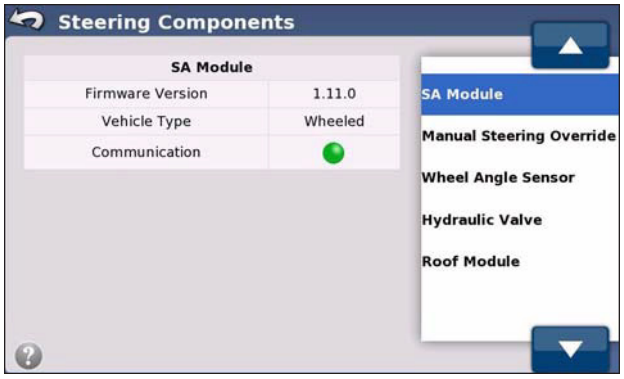
This screen enables you to adjust various parameters of steering components, such as the Manual Steering Override kickout limit, and view diagnostic information for system components. The list of components displayed varies depending on your individual installation. The Roof Module component is the only component that is always displayed.

## Roof Module

The Roof Module item enables you to reset the antenna calibration. An antenna calibration is an essential part of getting the most precise autosteering operation.

**1.** The Antenna Calibration should only be performed at the request of ParaDyme support personnel. The Antenna Calibration procedure can take hours to complete and you will not be able to operate your vehicle during this time.Press the **Reset Calibration** button to reset the antenna calibration.

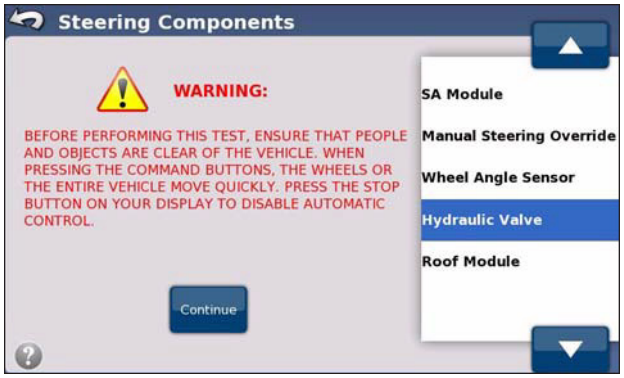
## SA Module (Sensor Actuator Module)




The SA Module connects the ParaDyme controller to all AutoSteer sensors and actuators. The SA Module receives sensor inputs from the Wheel Angle Sensor and the AutoSteer steering valve pressure transducer and outputs electrical signals to the AutoSteer steering valve to steer the vehicle.

The SA Module screen provides an indicator showing SA Module communication status, SA Module firmware version and vehicle type.

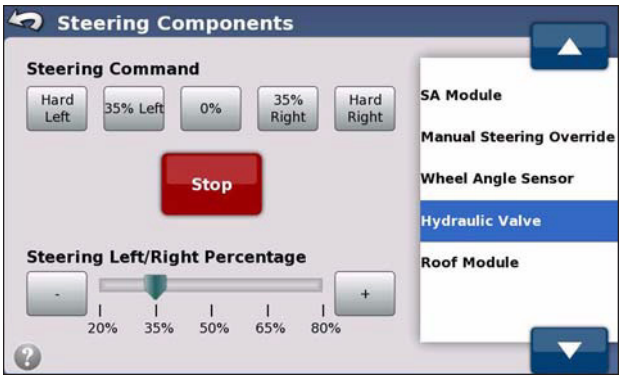
## Hydraulic Valve


Steering Components
WARNING:
BEFORE PERFORMING THIS TEST, ENSURE THAT PEOPLE AND OBJECTS ARE CLEAR OF THE VEHICLE. WHEN PRESSING THE COMMAND BUTTONS, THE WHEELS OR THE ENTIRE VEHICLE MOVE QUICKLY. PRESS THE STOP BUTTON ON YOUR DISPLAY TO DISABLE AUTOMATIC CONTROL.
Continue
SA Module
Manual Steering Override
Wheel Angle Sensor
Hydraulic Valve
Roof Module

The Valve Steering Diagnostics procedure is performed in order to verify that your hydraulic setup is operating correctly and to validate new installations.

**WARNING:** Before performing this test, ensure people and objects are clear of the vehicle. When pressing the command buttons, the wheels move quickly from side to side. Press the **STOP** button to halt the wheels.

To test steering valve performance:




1. Select Hydraulic Valve from the scrolling list. A warning statement appears.
2. Press the **Continue** button. The valve command screen appears.
3. Use the command buttons to send the specified command to the motor. Observe that the steering wheel behaves according to the specified command.

***Note:*** The command buttons control the rate at which the wheels turn.

- **Hard Left** button: Turns the wheel left at 100%.
- **% Left** button: Turns the wheels left the amount specified in the slider bar below the buttons.
- **0%** button: Drives the wheels to zero position.
- **% Right** button: Turns the wheels right the amount specified in the slider bar below the buttons.
- **Hard Right** button: Turns the wheel right at 100%.
- **Stop** button: Terminates the Steering Diagnostics procedure.
- Command Percent slider switch: Controls the change percentage on the intermediate left and right turns.

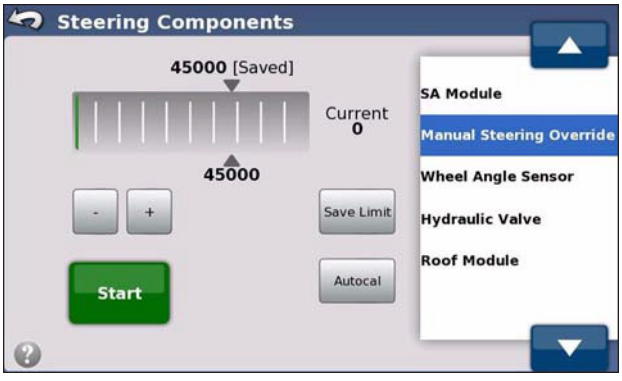
## Manual Steering Override (Autosteering Kick-out Limit Adjustment)

The pressure transducer is part of the hydraulic valve. Before you start autosteering, you need to set a maximum limit for the autosteering kick-out pressure (this setting determines how much force is required when manually turning the steering wheel to disengage autosteering). Try the factory default limit first. If the kickout limit is set too low, the system kicks out under normal autosteering conditions. If it is set too high, the wheel requires excessive force before the system kicks out.

There are two methods to adjust manual steering override. Use the Autocal method first. If you want to make additional adjustments, see *"Manual Steering Override Adjustment" on page 28*.

## Autocal Steering Override Adjustment

To adjust the transducer high pressure kickout limit:




1. Press the **Autocal** button. The **Auto Calibrate Introduction** screen appears.
2. After reading the introduction, press the Right Arrow button. The **Manual Steering Override** screen appears.
3. During the Auto Calibrate procedure, the vehicle will execute a series of left and right turns.Press the **Start** button to start the manual steering override calibration. The Auto Calibrate Progress screen appears.

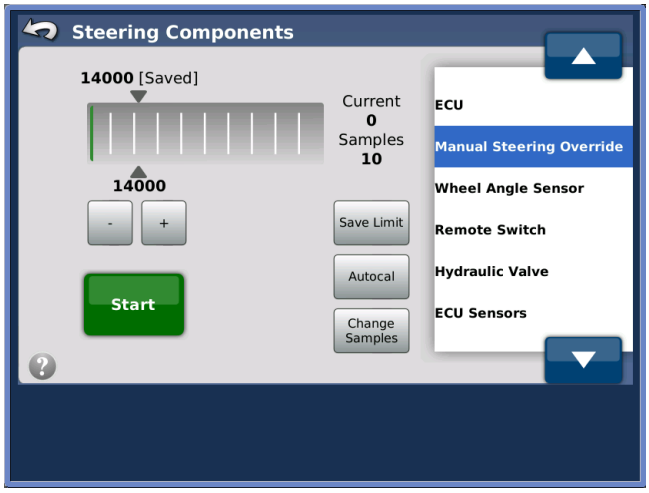
***Note:*** Your vehicle must be running between 1.6 mph (3 kph) and 5 mph (8 kph) before you start the Auto Calibrate procedure.

**4.** Follow the on-screen prompts to complete the calibration. When the calibration is complete, a confirmation prompt appears.

• If you need to move the vehicle to an open area, press the **Pause** button at any time to interrupt the calibration procedure.

**5.** Press the Check Mark button to save the calibration. The procedure is complete.

## Adjusting Manual Steering Override



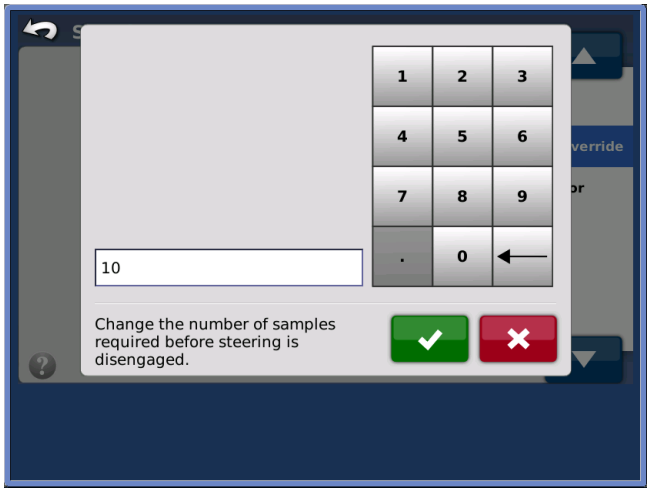

There are three methods to adjust manual steering override.

• **AutoCal** - Use this method first. See *"Autocal Steering Override Adjustment" on page 26*

• **Adjusting Samples Required setting** - if kick-out is not satisfactory using AutoCal, adjust samples required setting. See *"Adjusting Samples Required setting" on page 27*.

• **Manual Steering Override Adjustment** - if kick-out is still not satisfactory after using the previous two methods, use manual steering override adjustment. See *"Manual Steering Override Adjustment" on page 28*.

## Adjusting Samples Required setting




To adjust the Samples Required, press the Change Samples button (shown above). If the system disengages too easily press the arrow to delete the current setting and enter the new setting value.

• Decreasing the Samples Required will reduce the length of time the kick-out signal needs to be sent from the pressure transducer before it will kick the system out of autosteering. This will make the system more sensitive to kick-out signals.

• Increasing the Samples Required will increase the length of time the kick-out signal needs to be sent from the pressure transducer before it will kick the system out of autosteering. This will make the system less sensitive to the kick-out signal.

After adjusting the Samples Required setting test the system kick-out for proper function. If satisfactory results are not achieved re-adjust the setting and re-test. Repeat this process until satisfactory kick-out is achieved.

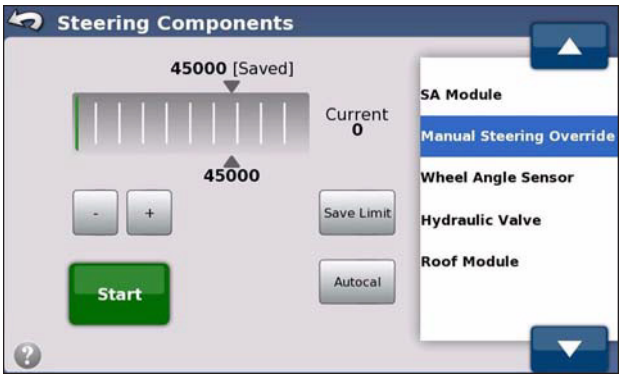
**WARNING:** It is possible to adjust the samples required in a way which will make the system unable to kick-out of autosteer. If you have questions about adjusting this setting please contact technical support.

***Note:*** Change Samples button is not present in all profiles.

## Manual Steering Override Adjustment

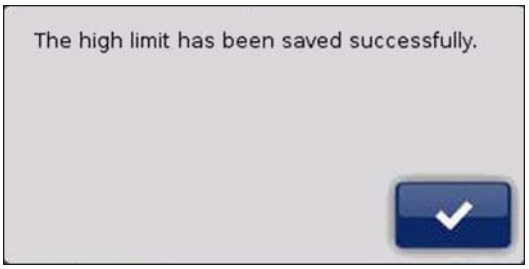
This procedure should only be used if you have already used the AutoCal procedure (see *"Autocal Steering Override Adjustment" on page 26*) and still want to make additional adjustments.

To adjust the transducer high pressure kickout limit:



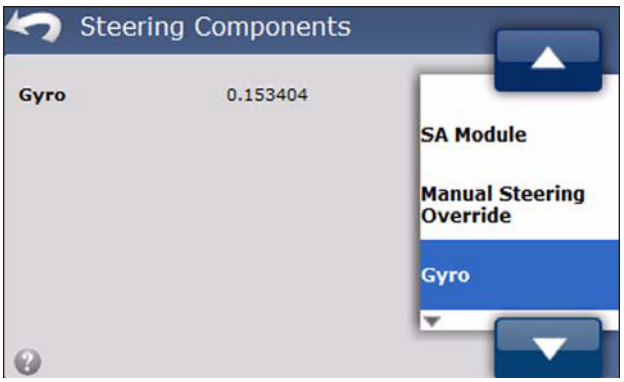

**1.** Press the **START** button and attempt to turn the steering wheel left or right with the factory default kick out value. If the default value works satisfactorily, proceed to Step 3. If you need to set a new value, proceed to Step 2.

**2.** If the system does not disengage, press the minus button to lower the kickout limit. If the system disengages too easily, press the plus button to raise the kickout limit. Turn the steering wheel left or right with the new setting until the system kicks out properly.




**3.** Once you are satisfied with the setting, press the **Save Limit** button to save the kickout limit. The successful save dialog box appears. Press the check mark button and then press the Right Arrow button.

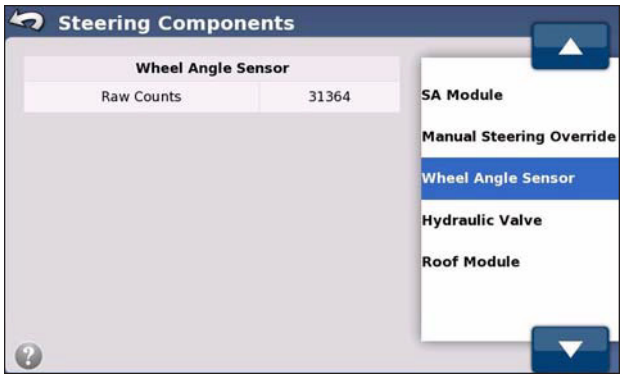
## Gyro




The gyro is used when the vehicle does not have a Wheel Angle Sensor installed. The gyro sends heading signals to the ParaDyme system in order to ensure efficient autosteering operations.

The scrolling list Gyro item displays a curvature rate if the gyro is installed.

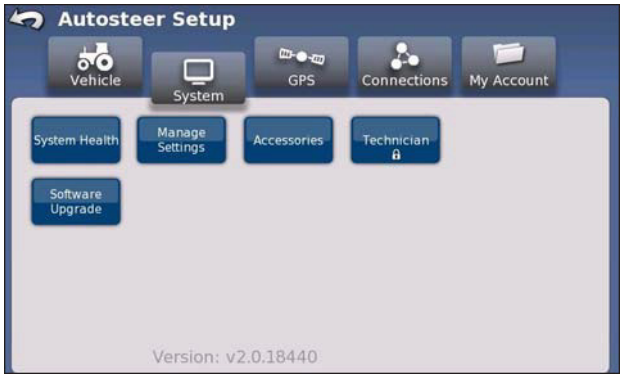
## Wheel Angle Sensor




The Wheel Angle Sensor is optional equipment. It sends wheel angle position signals to the system in order to ensure precise autosteering operations. The Wheel Angle Sensor item appears on the scrolling list when it is installed on the active vehicle. The Wheel Angle Sensor screen displays the Wheel Angle Sensor encoder counts when the sensor is functional.

# USING THE SYSTEM MENU

## OVERVIEW




The system menu features the following functions:

• System Health enables you to monitor system parameters and performance.

• Manage Settings enables you to save, delete or reset the information relative to the system database and log files.

• Accessories enables you to activate or deactivate optional sensors.

• Technician is password protected for use by qualified service technicians only.

• Software Upgrade enables you to

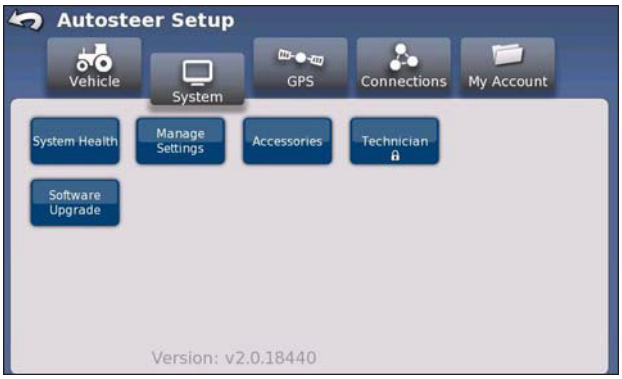
- with the latest application software available.

## SYSTEM HEALTH

The System Health screen provides diagnostic and status information for various aspects of steering system. Use the scrolling list on the screen right side to select the component for which you want health information. The overview screen displays the status of the components. Use the up and down arrows to select an item for which you want a detailed status.

To check the system parameters:

***Note:*** The following is a example status request. The procedure is the same for each item from the right side scrolling list.




**1.** From the System menu, press the **System Health** button. The System Health screen appears.

**2.** Using the up and down arrows, select the item you want from the right side scrolling list. The list of parameters for the selected item appears.

**3.** Use the up and down arrows from the left side scrolling list to select an item and view its detailed status.

# MANAGE SETTINGS

The Manage Settings screen enables you to:

- Save or delete the current log file.
- Save the current database or import a database.
- Reset all the current settings to the default factory settings.

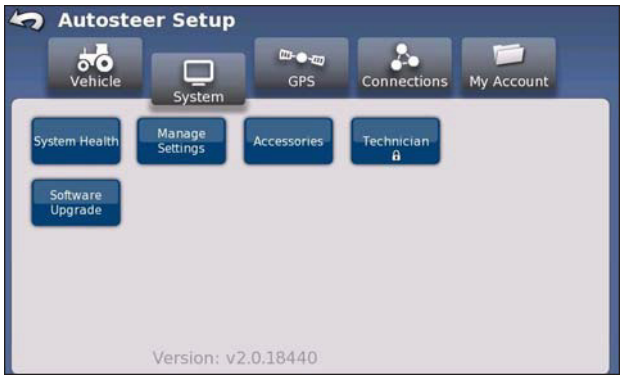
***Note:*** Insert a USB drive into the USB port of the Roof Module auxiliary harness before you copy log files, save or restore a database.

## Log File

The log files contain system data that can be used for diagnostic and troubleshooting purposes.

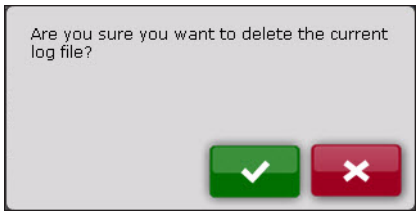
When pressing Copy, the ParaDyme system mounts the USB key. If no USB key is found, an error message appears indicating that no USB device has been found and prompts you to insert a USB drive and try again.

To manage the current log file:




**1.** From the System menu, press the **Manage Settings** button. The Manage Settings screen appears.

**2.** Select Log File and press the **Copy** button to save the current log file to the USB jump drive. The log file is saved.



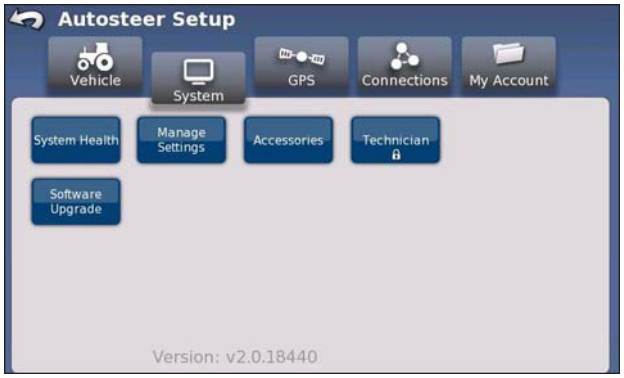

**3.** If you need to delete the log file, press the Delete button to delete the current log file from the system. The Delete Log File dialog box appears.

***Note:*** Use the Delete button if you want to free up memory or if you want to copy log files faster.

**4.** Press the check mark button to delete the current log file from the system.

## Database

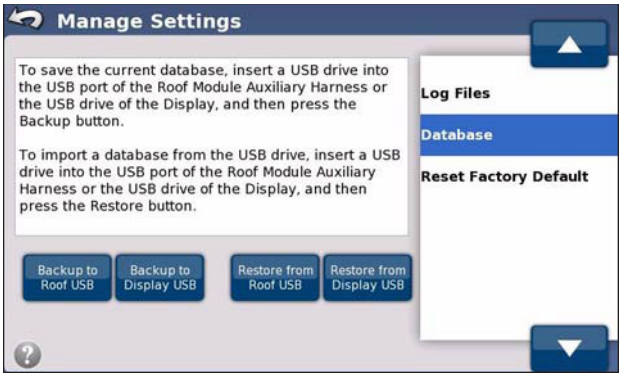
The Database contains all the vehicle and system parameter data required for system operation. Before attempting to restore or backup a database, the ParaDyme system mounts the USB key. To manage your database:




**1.** From the System menu, press the **Manage Settings** button. The Manage Settings screen appears. Select Database to display the available options.

# Database Backup Procedure

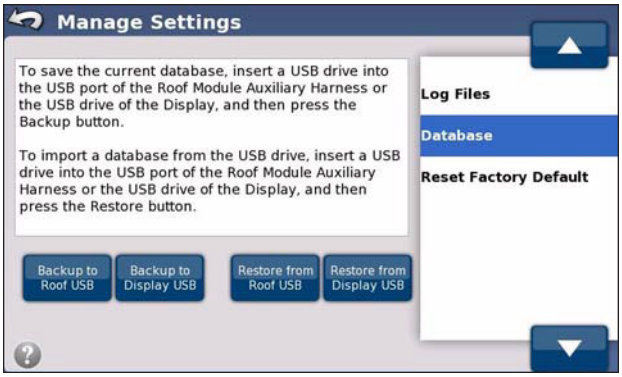
## To backup a database:


Manage Settings
To save the current database, insert a USB drive into the USB port of the Roof Module Auxiliary Harness or the USB drive of the Display, and then press the Backup button.
To import a database from the USB drive, insert a USB drive into the USB port of the Roof Module Auxiliary Harness or the USB drive of the Display, and then press the Restore button.
Log Files
Database
Reset Factory Default
Backup to Roof USB
Backup to Display USB
Restore from Roof USB
Restore from Display USB

**1.** Press the Backup button to save the database to the USB key. The database is now saved.

# Database Restore Procedure

## To restore a database:


Manage Settings
To save the current database, insert a USB drive into the USB port of the Roof Module Auxiliary Harness or the USB drive of the Display, and then press the Backup button.
To import a database from the USB drive, insert a USB drive into the USB port of the Roof Module Auxiliary Harness or the USB drive of the Display, and then press the Restore button.
Log Files
Database
Reset Factory Default
Backup to Roof USB
Backup to Display USB
Restore from Roof USB
Restore from Display USB

**1.** Press the **Restore** button to import a database to the system. The database selection screen appears. Restoring the database from a USB drive will overwrite the existing database in the ParaDyme system, replacing all existing information.

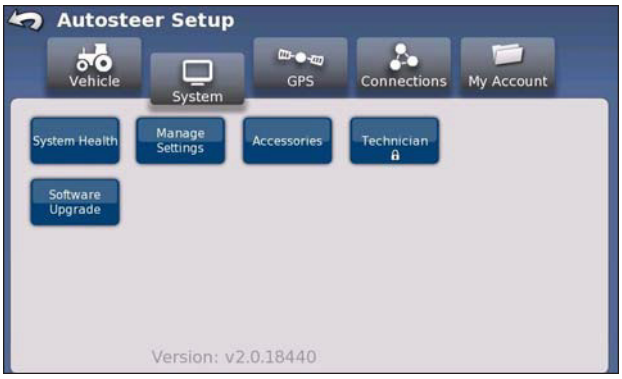
**2.** Use the up and down arrows to select the database you want to restore and press the check mark button. The database is now restored.

## Reset Factory Default

Reset enables you to reset all current settings including Base Stations and NTRIP profiles to the default factory settings except for Feature Codes.

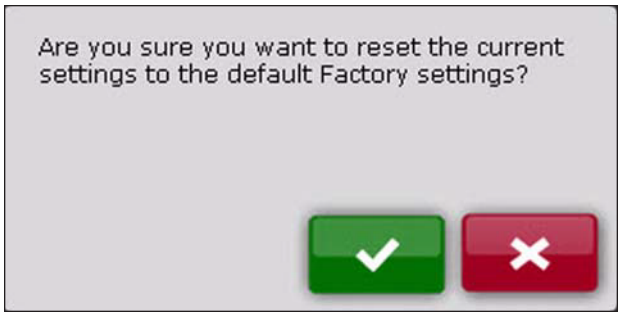
***Note:*** Resetting to factory defaults also requires the system to resurvey GPS, which may take several minutes.

To reset the current settings:




**1.** From the System menu, press the **Manage Settings** button. The Manage Settings screen appears.

**2.** Select **Reset Factory Default** and press the **Reset** button to reset all the current settings to the default factory settings. The reset dialog box appears.




**3.** Press the check mark button to reset all the current settings to the default factory settings.

***Note:*** If this option is selected, all settings will be reset and you will need to create, calibrate and tune a new vehicle. You will also need to reconfigure any Base Stations or NTRIP profiles. database backup is strongly suggested before resetting to defaults.

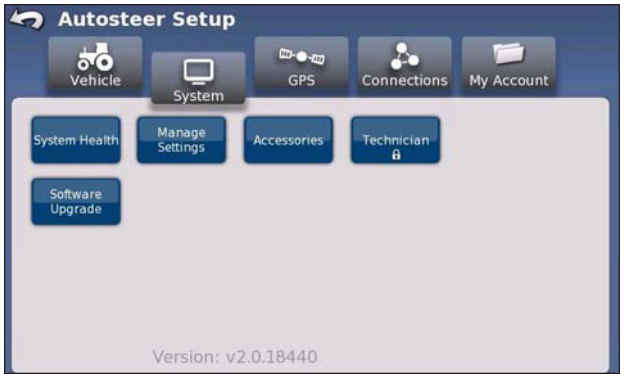
# ACCESSORIES

The **Accessories** menu is used to activate or deactivate optional sensors. Currently, only the remote engaged switch is available. These options are always displayed when available. Once activated, the system is aware that the sensor is installed and functional. When options are functional diagnostic information is gathered and any malfunction of the sensor is reported through the diagnostic manager. If the sensor is removed warnings and errors are reported until the sensor is deactivated in the system.

***Note:*** The Remote Engage Switch (RES) is optional equipment. If you plan to use the Remote Engage Switch, go to the **Accessories** menu to activate the sensor.

## Remote Engage Switch (RES)

To activate the Remote Engage Switch:




**1.** From the System menu, press the **Accessories** button. The Accessories screen appears.

**2.** Press the **Enable** button to activate the Remote Engage Switch. The Remote Engage Switch enabled screen appears.

# TECHNICIAN

The Technician screen is password protected for use by qualified service technicians only.

# SOFTWARE UPGRADE

The Software Upgrade screen enables you to upgrade your system with the latest application software:

- Upgrade Via Roof Module USB Upgrade Via the Display USB
- Upgrade Via WiFi Using a PC

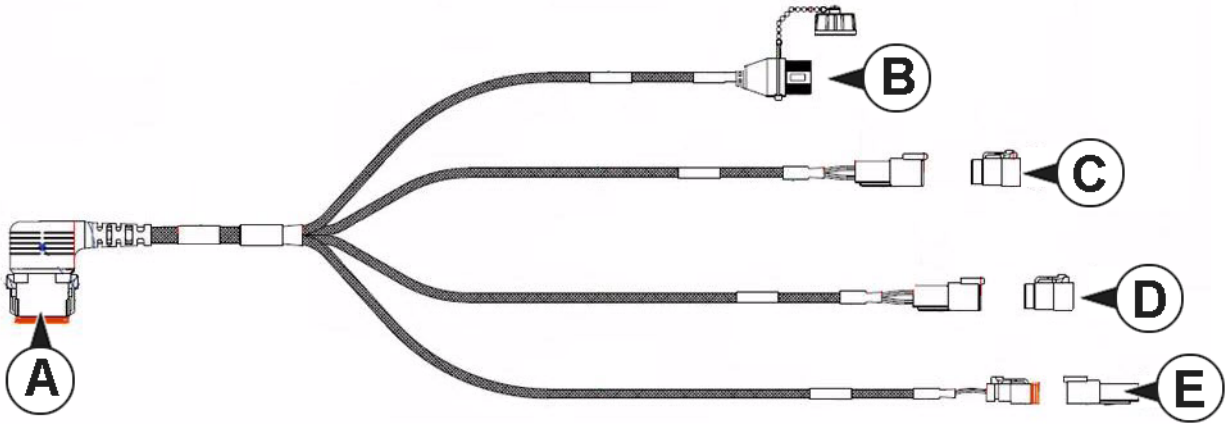
## Upgrade Via Roof Module USB

***Note:*** When upgrading your software via the Roof Module you must use the Roof Module Auxiliary Harness P/N 201-0433-02.

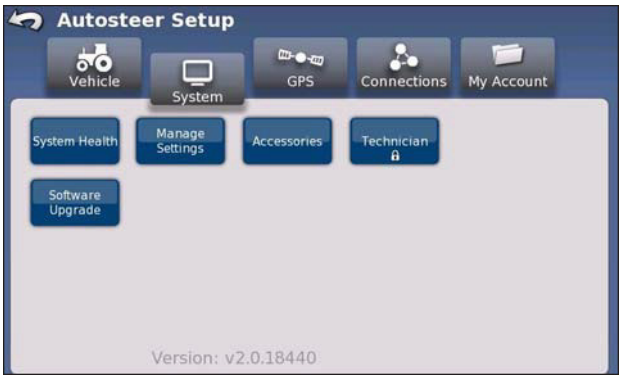
***Note:*** The USB drive to be used must contain at least one upgrade bundle before starting the upgrade process.

To upgrade the software:

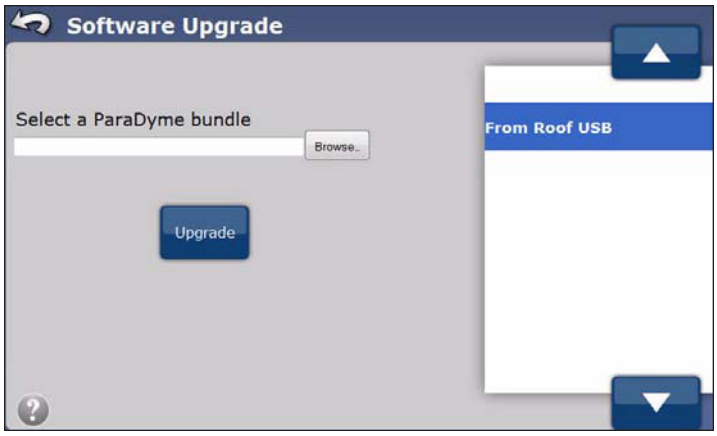
**1.** Insert a USB drive containing the upgrade bundle into the Roof Module auxiliary harness USB port.




- (A) Connect to ParaDyme Roof Module
- (B) USB Port
- (C) Serial A
- (D) Serial B
- (E) Power Out



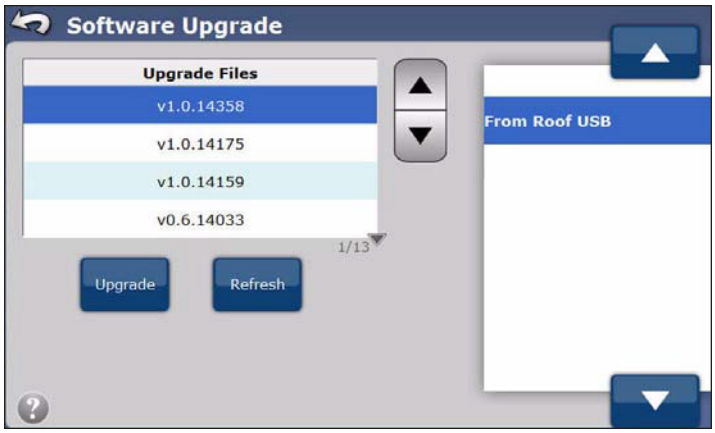

**2.** From the **System** menu, press the **Software Upgrade** button. The Software Upgrade screen appears.




**3.** Press the **From Roof USB** menu item in the scrolling list. The From Roof USB Upgrade Files screen appears.

• Press the **Refresh** button to update the list.

**4.** Press the required ParaDyme software bundle from the Upgrade Files list.



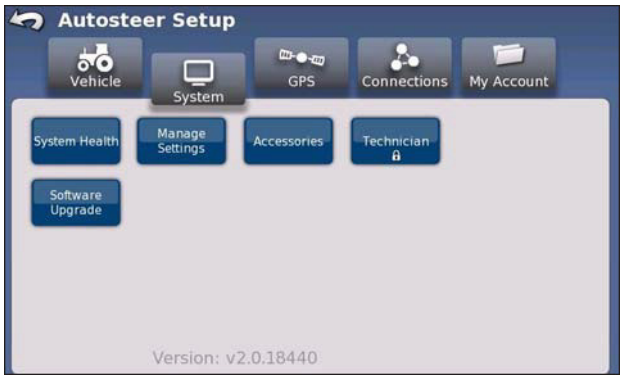

**5.** Press the **Upgrade** button to start the upgrade process.

**6.** The upgrade process goes through a series of steps and reboots the ParaDyme system after a successful upgrade.

**7.** \Press the Check button after the upgrade and ParaDyme reboot is complete.

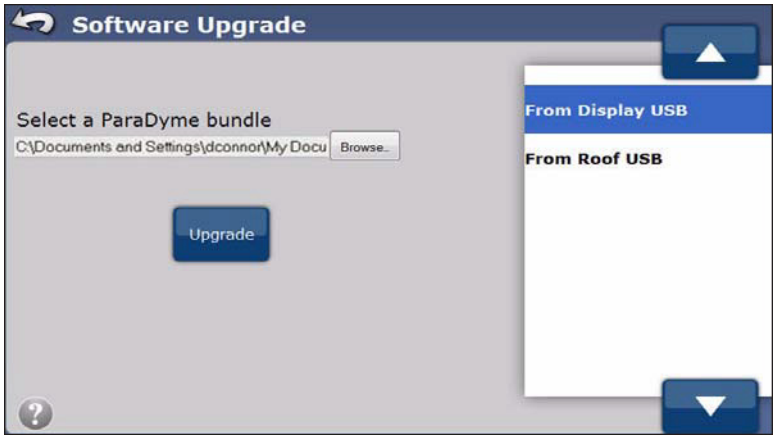
**8.** The ParaDyme system is now ready for normal operation.

## Upgrade Via the Display USB




**1.** Insert a USB drive containing the Paradyme system software upgrade bundle into the display USB port.

**2.** From the System menu, press the **Software Upgrade** button. The Software Upgrade screen appears.




**3.** Press the Browse button to find a ParaDyme software bundle from the USB drive connected to the Display USB port.

**4.** Select the desired software bundle from the File Selection list and press the check mark button.

**5.** The upgrade process goes through a series of steps and reboots the ParaDyme system after a successful upgrade.

**6.** Press the Check button after the upgrade and ParaDyme reboot is complete.

**7.** The ParaDyme system is now ready for normal operation.

## Upgrade Via WiFi Using a PC

The ParaDyme system WiFi connection enables wireless connection between a laptop PC and the ParaDyme system. After establishing the WiFi connection with the laptop PC the ParaDyme system can access and upgrade its software directly from the laptop PC.

***Note:*** See *"Configuring PC Settings for WiFi Connection" on page 59* for instructions on establishing a WiFi connection with the ParaDyme system.

**1.** Enable the ParaDyme WiFi connection.

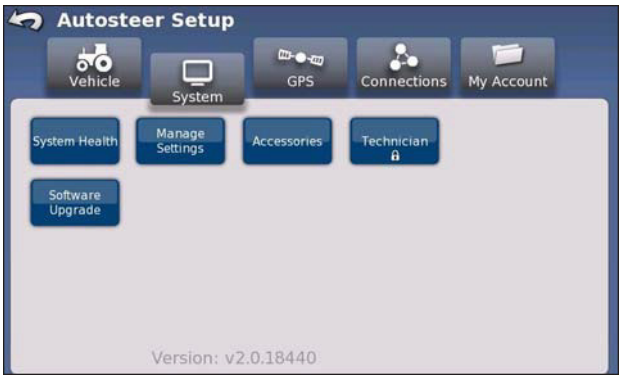
***Note:*** See *"Configuring PC Settings for WiFi Connection" on page 59* to verify the ParaDyme system WiFi enable status and for instructions on how to enable the ParaDyme system WiFi connection, if it is currently disabled.

**2.** Connect your PC to the WiFi network.

***Note:*** See *"Configuring PC Settings for WiFi Connection" on page 59* for instructions on establishing the WiFi network connection.

**3.** Start a browser on your PC and enter the following IP Address: 10.100.100.100

**4.** Your PC will connect to the ParaDyme system main screen.



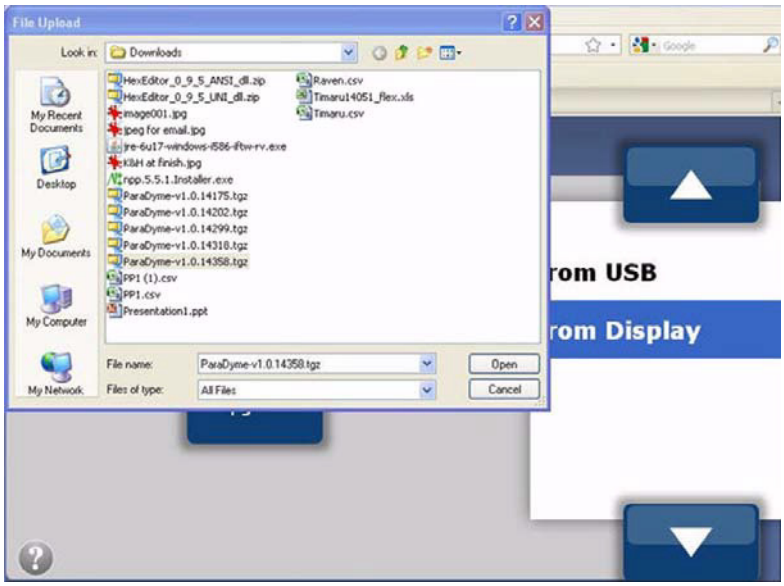

**5.** Press the **System** button from the main ParaDyme system main screen.

**6.** Press the **Software Upgrade** button.

**7.** Press the Browse button to select a ParaDyme software bundle from the Display.

***Note:*** If your Laptop PC WiFi connection is working you will see your PC directories in the browse screen when you have the **From Display USB** menu item selected in the scrolling list. The **From Display USB** menu item in the scrolling list is actually your PC.

**8.** Select the appropriate ParaDyme bundle from the File Upload browser screen.




**9.** Press the **Open** button.

**10.** Press the **Upgrade** button to start the software upgrade. The upgrade uploading process begins.

**11.** The upgrade process goes through a series of steps and reboots the ParaDyme system after a successful upgrade.

**12.** The ParaDyme system reboots after the software upgrade is complete.

***Note:*** The WiFi connection is closed when the ParaDyme system reboots.

13. The ParaDyme system is now ready for normal operation.

# USING THE GPS MENU

## OVERVIEW

The **GPS** menu enables you to monitor and set GPS parameters and perform tasks to optimize your AutoSteer system performance. The **GPS** menu features the following functions:

• RTK enables you to set all the RTK radio settings.

• OmniSTAR enables you to view information about your OmniSTAR subscription (optional for the ParaDyme system), to select startup accuracy and to select a channel according to your geographical location.

• WAAS enables you to select the Primary PRN and Alternate PRN for your WAAS configuration.

• Precision Settings enables you to set a Flex mode for autosteering.

• NTRIP enables you to connect to NTRIP based GPS correction sources (RTK, OmniSTAR, WAAS) via a cell modem.

• Planning Tool is informational only. It gives access to information enabling you to make decisions about farming applications based on GPS status and quality.

• GPS Diagnostics is informational only. It provides access to information about the performance of the GPS system.

• NMEA Out enables you to use the ParaDyme system GPS signals with other 3rd party precision agriculture applications.

# RTK

The RTK screen enables you to set all the RTK radio settings.

***Note:*** RTK is a position location process using a GPS receiver and a Base Station to provide sub-inch position accuracy.

To access the RTK screen:

**1.** From the GPS screen, press the **RTK** button. The RTK screen appears.

**2.** There are several RTK options available. Refer to the following sections for details.

***Note:*** The items in the right hand scrolling list change depending on which radio is installed and which RTK Connection Type is selected.

## General

The General item shows you if the system is receiving a RTK fix solution and which channel or frequency is current. The

Radio Type can be either 900 MHz (Freewave) or AFLink (Satel).

• GPS Mode has three different status indicators as follows:

- A Red indicator shows that RTK is not ready.
- A yellow indicator shows that the system is retrieving an RTK corrections fix.
- A green indicator shows that RTK is ready.
  - You will not be able to autosteer your vehicle before the Heading item (See the GPS Diagnostics section for details.) displays a value.

• Distance to base shows the distance from the vehicle to the Base Station.

- # of satellites shows how many satellites the Base Station is tracking.
- Base Position shows the Base Station position in degrees, minutes, seconds and decimals of seconds.

***Note:*** The items in the right hand scrolling list change depending on which radio is installed.

## Change Channel

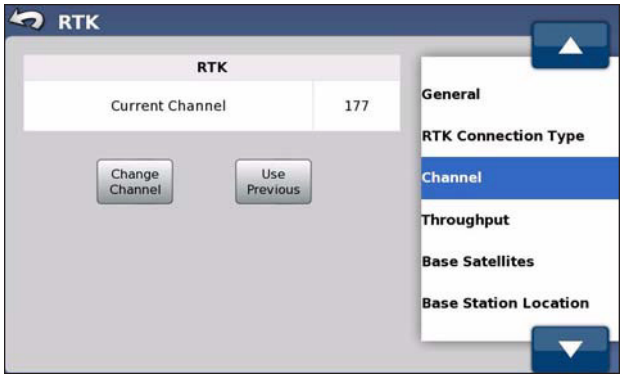
The radio used with the ParaDyme system provides communication with a Base Station to produce repeatable sub-inch accuracy. The radio also communicates with the Roof Module for GPS correction information. The radio must be configured for the correct radio channel (for 900 MHz radio) or frequency (for AFlink radio) in order to provide correction information. Also, any time you want to use different Base Station (or repeater) hardware, you must change the radio channel.

The radio enables the system to receive RTK corrections from the Base Station set to the same radio channel. The channel item enables you to enter the channel number or frequency number that corresponds to an appropriate base station.

***Note:*** Before proceeding with the Radio Channel Configuration procedure, ensure your Base Station is properly installed and operational. Also, ensure the RTK radio is set to the same channel or frequency as the Base Station radio. See your Base Station Manual for installation and operation instructions.

### Changing the 900 MHz Radio Channel

To change the 900 MHz radio channel:




**1.** Obtain the radio channel number assigned to your Base Station and select the Channel item from the scrolling list. Press the **Change Channel** button. The Enter Radio Channel screen appears.

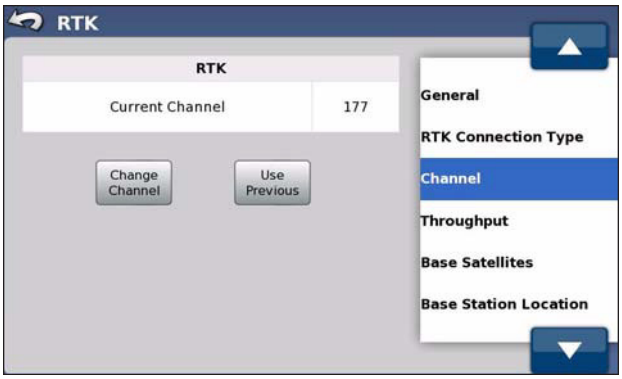
***Note:*** Your Base Station channel number is displayed on the Base Station receiver side.

The items in the right hand scrolling list change depending on what kind of radio you have installed.

**2.** Enter the radio channel using the keypad and press the check mark button. The GPS RTK menu appears.

***Note:*** Ensure the vehicle radio channel is the same as the Base Station channel.

To use a previous channel:

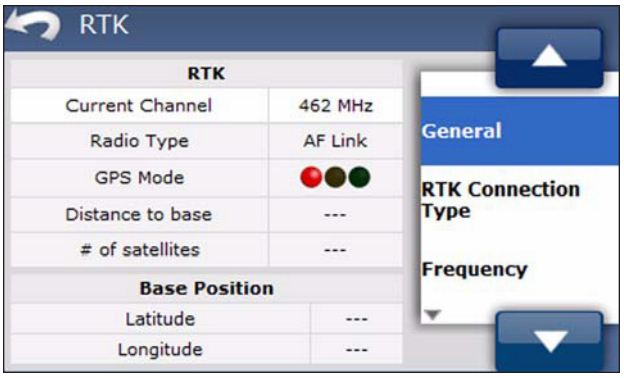



**1.** From the Channel screen, press the **Use Previous** button. The previously used channels list appears.

**2.** Select a channel using the up and down arrows and press the check mark button to return to the RTK Radio screen.

## Changing the AFLink Radio Frequency

To change the AFlink radio frequency:




**1.** Obtain the radio frequency number assigned to your Base Station and select the Frequency item from the scrolling list.

Next, press the **Change Frequency** button. The Enter frequency screen appears.

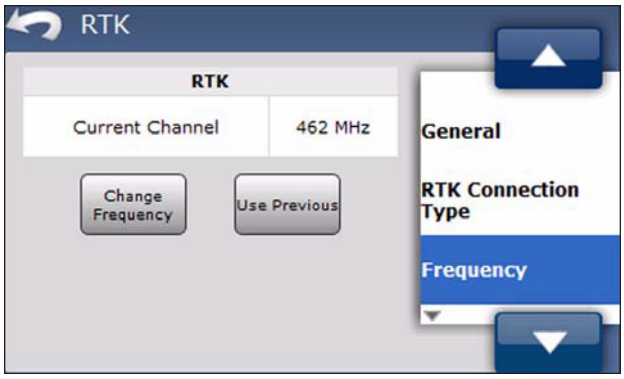
**2.** Enter the radio frequency using the keypad and press the check mark button to return to the **RTK** menu.

***Note:*** Your Base Station frequency number is displayed on the Base Station receiver side.

***Note:*** The items in the right hand list change depending on what kind of radio you have installed.

***Note:*** Ensure the vehicle radio frequency is the same as the Base Station frequency. Also, the Channel Spacing must match the settings of the transmitting radio. Setting the Channel spacing value is only performed once or when the base station is changed. Communications will not operate properly if the settings are not matched.

To use a previous frequency:




**1.** From the Frequency screen, press the **Use Previous** button. The previously used frequencies list appears.

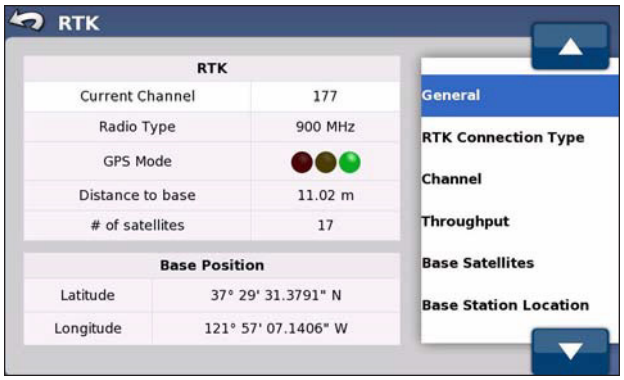
**2.** Using the up and down arrows, select a frequency and press the check mark button to return to the GPS RTK menu.

## RTK Connection Type

The RTK Connection Type screen enables you to select a method of connecting to RTK corrections. The available options are:

- Internal Radio - Receives RTK corrections via the internal radio (either 900MHz or an AFLink) pre-installed on the ParaDyme Roof Module.
- External Radio - Receives RTK corrections via a third party Radio connected externally to ParaDyme Roof Module using the auxiliary cable. This option is used when you have an installed third party radio for connection to a third party transmitter.
- NTRIP - Enables you to connect to GPS correction sources via a cell modem.

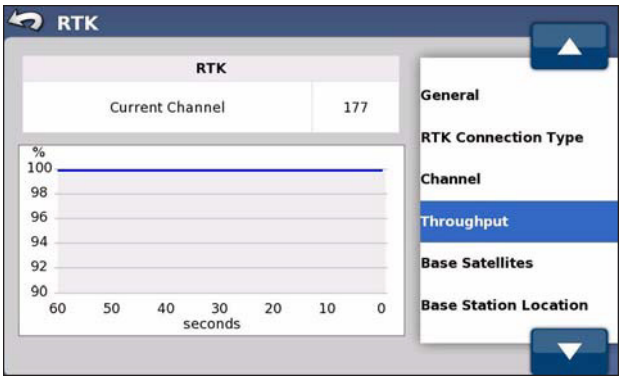
***Note:*** See *"NTRIP" on page 48* for additional information regarding NTRIP.




**1.** Press the RTK Connection Type item in the scrolling list.

**2.** Press the up/down arrows to select an RTK Connection Type, then press the **Apply** button. Your RTK Connection Type is now set.

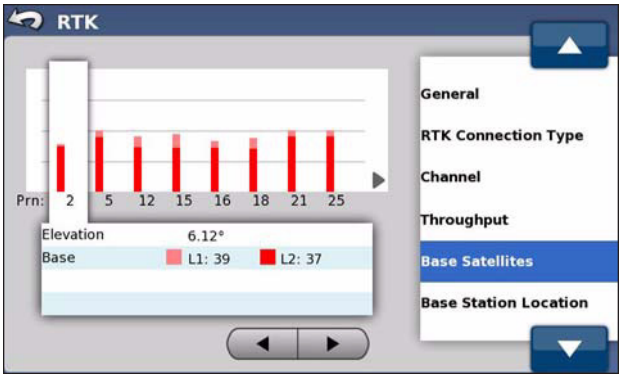
## Throughput




The Throughput screen shows radio data that is saved into the database. This data is used for diagnostic and troubleshooting purposes. The Current Channel indicates the channel associated with the data.

***Note:*** If a "Base not activated" message appears, contact your dealer for a feature code to "unlock" the Base Station.

## Base Satellites




The Base Satellites screen shows the current tracked satellites from the Base Station. the screen is refreshed every second. Use the Left or Right Arrow buttons to select a satellite.

The screen displays the following information:

- Elevation of the Base Station above the horizon
- L1 frequency signal strength
- L2 frequency signal strength

## Base Location

The Base Location screen displays current latitude and longitude data for the Base Station as well as latitude and longitude for the most recent saved Base Station location. It also enables you to update the saved location to match the current location.

The following fields are displayed on the Base Location screen:

- Saved Location displays the latitude and longitude of the most recent saved Base Station location. This position data will not be accurate unless a 24 hour Base Station survey at the current location was completed before the ParaDyme system was turned on.
- Current Location displays the current latitude and longitude of the Base Station. This location is automatically updated frequently until a 24 hour survey is complete.
- Difference displays the distance between the saved location and the current location in latitude and longitude.
- Base Completed 24hr Survey indicates whether or not the current Base Station location has completed a 24hr survey. A complete 24 hour survey is required to achieve accurate latitude and longitude. The process allows the Base Station to "lock in" accurate position data that will not shift as long as the Base Station is in the same physical location.
- Update changes the latitude and longitude of the Saved Location to match the Current Location. This should only be done after a 24 hour survey is complete. See the following section for details.

## Using the Base Location Update Function

***Note:*** The Update function only works with Base Stations that output INX protocol.

You will only need to use the Update function if your current job meets all of the following criteria:

- You want to begin work before the Base Station has completed a 24 hour survey at the current location.
  - and-
- Your initial work does not require accurate latitude and longitude and does not require repeatability (the ability to Autosteer over the same guidance paths).
  - and-
- Subsequent work on the same job does require accurate latitude and longitude and repeatability.

You will not use the Update function if your current job:

- Requires accurate latitude and longitude for all work. (In this case a complete 24 hour survey is required.)
  - or-
- Requires repeatability but does not require accurate latitude and longitude for any part of the work. (In this case neither a 24 hour survey or use of the Update function is required.)

***Note:*** For more information on “repeatability”, accurate latitude and longitude, 24hr survey, and Base Station setup information, refer to your Base Station Hardware Manual.

## Using the Update Saved Location Procedure

**1.** Power ON the Base Station at the job location.

**2.** Power ON the ParaDyme system. An initial (and inaccurate) position is displayed in the Saved Location field.

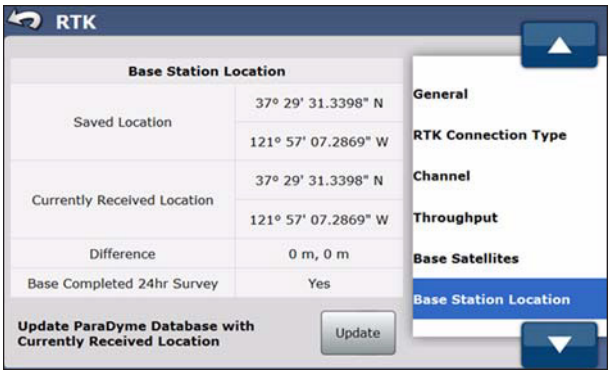
**3.** Begin work on the part of your job that does not require accurate latitude/longitude or repeatability.

**4.** When you have finished the first part of your job and the Base Station has completed a 24 hour survey, navigate to the RTK Radio screen and press the Base Location item in the scrolling list.

**5.** Press the **Update** button. A confirmation prompt appears.

***Note:*** When you use the Update function, the longitude and latitude data for all previous work on the current job will shift. You may want to note the data in the Difference field if you want to manipulate the position data for the work you have already done - this is not a recommended or supported procedure.

***Note:*** You should only press the **Update** button if the Base Completed 24hr Survey items displays “Yes”.




**6.** Press the check mark button at the confirmation prompt. The saved location is updated and the Base Location screen reappears.

**7.** Begin your next work session. All subsequent work will be repeatable and have accurate latitude and longitude. You will not use the Update function again for this Base Station.

# OMNISTAR

The OmniSTAR screen enables you to view information about your OmniSTAR subscription, to select a startup accuracy and to select a channel according to your geographical location. OmniSTAR correction signals are optional for the ParaDyme system.

## OmniSTAR Background Information

OmniSTAR is a wide-area differential GPS service, using satellite broadcast techniques. OmniSTAR offers GPS correction services that improve the accuracy of a GPS receiver.

The OmniSTAR service include dual frequency (L1/L2) carrier phase solutions. Accuracy depends on satellite geometry, local conditions, receiver capability and other variables. Typically, the L1/L2 solutions (OmniSTAR HP, OmniSTAR XP or HP/XP combined) provide horizontal accuracies of +/- 15 cm.

OmniSTAR correction signals are proprietary, and a subscription must be purchased from the OmniSTAR corporation to receive a subscription authorization.

The OmniSTAR HP and XP services require OmniSTAR-capable dual-frequency GPS receivers. By using L1/L2 atmospheric corrections and carrier phase techniques, these services achieve higher levels of accuracy.

OmniSTAR is a Differential GPS (DGPS) System. It is capable of improving regular GPS to sub-meter accuracy. GPS computes a user's position by measuring pseudo-ranges to three or more GPS satellites simultaneously. The pseudorange (from pseudo- and range) is an approximation of the distance between a satellite and a navigation satellite receiver - for instance, Global Positioning System (GPS) receivers.

In North America, a single satellite is used, but it needs three separate beams to cover the continent. The three beams are arranged to cover the East, Central, and Western portions of North America. The same data is broadcast over all three beams, but the user system must select the proper beam frequency.

To obtain an OmniSTAR subscription, phone your local OmniSTAR office:

- North and South America: +1 888-883-8476
- Australia: +61-8-9322-5295 or visit: http://www.omnistar.com

When you phone OmniSTAR they can usually provide your subscription over the phone and you can see the subscription status change. OmniSTAR offers a quick, efficient subscription initialization and renewal service available 24 hours a day.

There are two levels of OmniSTAR service available with the ParaDyme system:

- OmniSTAR XP - XP is defined as better than 20 cm
- OmniSTAR HP (High Performance) - HP is defined as better than 10 cm

• The selection of XP or HP in your receiver is determined by the subscription sent to a receiver when it is activated for OmniSTAR.

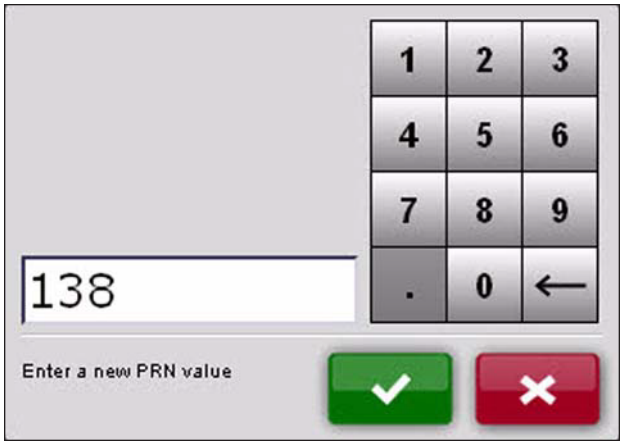
## OmniSTAR Options

To get to the OmniSTAR screen:

**1.** Press the **OmniSTAR** button from the **GPS** menu. The **OmniSTAR** screen appears.

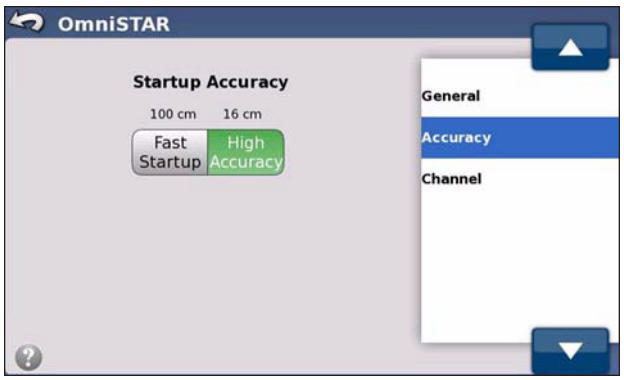
**2.** There are three OmniSTAR options available. Refer to the following sections for details.

### General




The General screen displays information about your OmniSTAR subscription.

### Accuracy




The Accuracy screen displays two buttons enabling you to choose the accuracy level you want to use with your OmniSTAR. The higher the initial accuracy requirement, the longer you have to wait to get a valid position. Choosing Fast Startup indicates that the operation you're performing does not require high accuracy and you just want to get autosteering as soon as you have a valid position. Choosing High Accuracy indicates that you are willing to wait for better accuracy before getting a valid position.

***Note:*** If you choose Fast Startup, this only affects the accuracy at initial startup; eventually, the accuracy improves to the highest accuracy enabled by your current subscription type.

- For OmniSTAR XP, Fast Startup = 40 inches and High Accuracy = 9 inches.
- For OmniSTAR HP, Fast Startup = 40 inches and High Accuracy = 6 inches.

## Channel

The Channel screen enables you to chose the appropriate channel for your geographical location.

1. From the OmniSTAR screen, use the up/down arrows to select the Channel from the scrolling list. The Channel screen appears.
2. Press the **Change Channel** button. The Select Satellite screen appears.
3. Using the up/down arrows, choose a satellite and press the check mark button. The OmniSTAR Channel screen appears.

***Note:*** The OmniSTAR Channel screen text box displays your latest selection of satellite.

# WAAS

The WAAS screen enables you to select the Primary PRN and Alternate PRN for your WAAS configuration.

## WAAS Background Information

WAAS is a satellite-based augmentation system that provides GPS correction coverage (better accuracy) for the United States and parts of Canada.

WAAS is a satellite based augmentation system that provides GPS correction coverage for the entire United States and parts of Canada. WAAS is based on a network of approximately 25 ground reference stations that cover a very large service area. Signals from GPS satellites are received by wide area ground reference stations (WRSs). Each of these precisely surveyed reference stations receives GPS signals and determine if any errors exist. These WRSs are linked to form the U.S. WAAS network. Each WRS in the network relays the data to the wide area master station (WMS) where correction information is computed. While WAAS is less accurate than RTK, it's free and it enables users to work without a Base Station.

Each WAAS satellite has its own pseudorandom noise (PRN) code, which is a unique identification code.

## WAAS PRN Number Selection

To change the WAAS PRNs:

1. From the **GPS** menu, press the **WAAS** button. The **Change PRN** screen appears.
2. Press the **Change Primary** button. The numerical keypad appears.
3. Enter a PRN number and press the check mark button. The Change PRN screen appears.

***Note:*** PRNs are satellite identifiers. Enter the primary and alternate satellite PRN to use for WAAS correction. The alternate PRN is used when the primary PRN becomes unavailable. For the US WAAS, try PRN 138 first. If the signal is weak, consult the FAA web site, or contact your dealer for updates.

**4.** The procedure to change the Alternate PRN number is similar to the procedure to change the Primary PRN.

## PRECISION SETTINGS

The Precision Settings screen enables you to set the GPS Differential correction source and to enable Flex mode for autosteering. Flex mode provides continuity of position solution to maintain automated steering by seamless flexing (transitioning) to a lower accuracy mode when a higher accuracy mode is lost; such as loss of the RTK radio link.

For example, if you get too close to a large group of trees or buildings, you might temporarily lose signal. The flex mode enables you to flex back to a lower accuracy mode without loss of autosteering.

The system attempts to achieve position with the best available mode and automatically transitions to the next best mode. The transition is seamless. Reverting to a better mode is automatic and instantaneous if the system is not actively steering. If the system is actively steering when a better GPS position is restored, the system gradually shifts to higher accuracy mode: position jumps are possible whenever switching between modes, except when flexing from RTK to Omnistar or SBAS.

The ParaDyme system can operate in various GPS precision modes. The different modes are described in the following sections. GPS reception mode is selected in the Precision Settings screen.

The modes are:

- RTK Only mode: a radio connection, or NTRIP connection, is required for the system to work. See *"Change Channel" on page 39* and *"NTRIP" on page 48* for details.
- Flex High Accuracy (0-10 cm): Flex mode provides continuity of position solution to maintain automated steering with seamless "flexing" (switching) to a lower accuracy mode when a higher accuracy mode is lost. Flex mode automatically returns to the higher accuracy mode as soon as it becomes available.
- Flex Low Accuracy (0-30 cm): This mode is identical to Flex High Accuracy (0-10 cm) except for the upper limit of acceptable accuracy - 10 cm for high accuracy, 30 cm for low accuracy.
- OmniSTAR Only mode: the system will only use the OmniSTAR signal as its correction source (optional for the ParaDyme system).
- OmniSTAR Flex to SBAS – When OmniSTAR is temporarily lost, the system will Flex to SBAS to retain steering and automatically returns to the higher accuracy mode when it becomes available.
- WAAS Only mode: the system will only use the WAAS signal as its correction source.
- Autonomous Pass-to-Pass - Available for areas of the world that do not have a freely available differential source.

***Note:*** In OmniSTAR Mode, the system does not attempt to calculate RTK corrections. In Flex mode with an OmniSTAR solution achieved, the system can AutoSteer. If the OmniSTAR corrections are lost, the system flexes to WAAS. If a Base Station is being received, the system uses RTK corrections. If communication with the Base Station is lost, the system flexes to OmniSTAR, if available.

***Note:*** WAAS must be running for 5-10 minutes before it is possible to flex to WAAS.

To select a Precision Settings mode:

**1.** Press the **Precision Settings** button from the GPS menu. The Select Mode screen appears.

**2.** The Active window for the current mode appears. To change mode press the **Change Mode** button.

**3.** To select a mode, press the mode of your choice in the Select Mode window scrolling list and press Apply.

**4.** The Active window now displays your latest selection.

# NTRIP

The NTRIP screen enables you to connect to NTRIP based GPS correction sources (RTK, OmniSTAR, WAAS) via a cell modem.

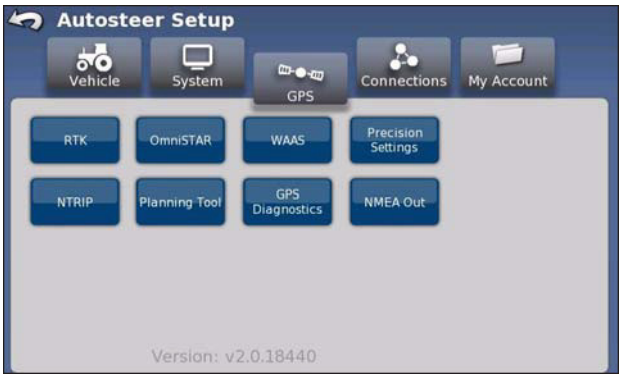
NTRIP (Network Transport of RTCM via Internet Protocol) is a standard protocol for providing GPS data and corrections over the Internet to improve accuracy. The ParaDyme system currently supports the following stream types:

CMR+, RTCM 2.x, RTCM 3.x. Contact your dealer for details on how to configure your system for NTRIP.

***Note:*** Actual NTRIP coverage may vary depending on system availability, equipment, terrain, signal strength, weather conditions and other conditions. Contact your dealer for details about NTRIP service providers in your area.

***Note:*** *The availability, quality, integrity, content, and reliability of the NTRIP provider data streams (correction signals) is not guaranteed and neither is the reliability of the cellular network. Access and use of the service provider data streams may be monitored for reporting and other purposes.*

To access a correction signals source via a NTRIP connection:




**1.** Press the **NTRIP** button from the GPS menu. The NTRIP screen appears.

**2.** There are two NTRIP options available. Refer to the following sections for details.

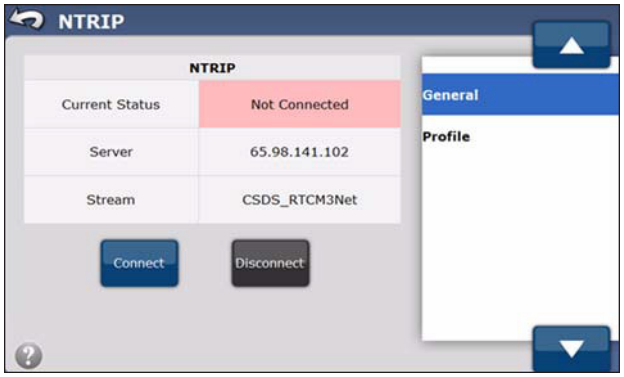
***Note:*** If no profile exists, both the **Connect** and **Disconnect** buttons are greyed out.

## General

The NTRIP General option displays the status of the NTRIP configuration and enables you to connect to a selected NTRIP server.

***Note:*** If no profile exists, both the **Connect** and **Disconnect** buttons are greyed out and shows no Server or Stream data from a previous connection. If a profile does not exist, you must create one. See *"Profile" on page 49* for instructions on creating a profile.

To connect to a NTRIP server:



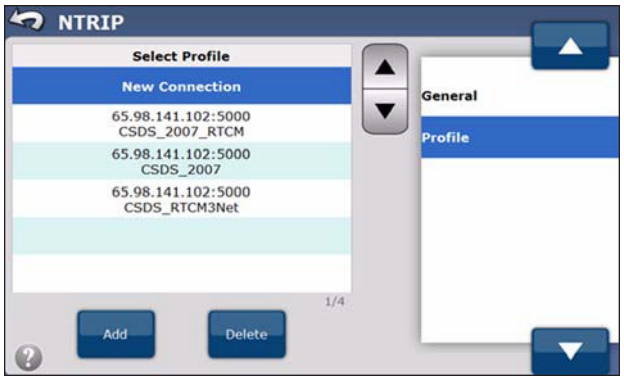

**1.** Select the General item from the scrolling list on the right and press Connect to connect to the default profile server.

**2.** The connection to the NTRIP server is being established.

**3.** Upon successful connection a dialog indicates the connection is established.

## Profile

The NTRIP Profile option enables you to configure new NTRIP connection profiles or delete profiles that no longer apply. To create a new Profile:




**1.** Use the up and down arrows on the right scrolling list to select Profile. The Profile screen appears. Use the up and down arrows on the left scrolling list to select New Connection, and then press Connect. The NTRIP Profile screen appears.

**2.** Press the **Edit** button next the Server field to enter a server name. The keyboard appears.

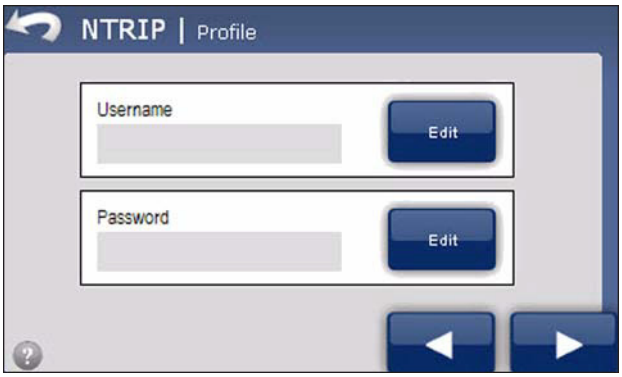
**3.** Enter a server IP Address and press the check mark button to return to the NTRIP Profile screen. Press the **Edit** button next to the Port field to enter a port. The keyboard appears.

***Note:*** The name of the server is provided by your dealer or NTRIP provider.

**4.** Enter a port number and press the check mark button. The Profile screen appears.

**5.** Select a profile from the scrolling list, and then press the Right Arrow button.

***Note:*** If a user name and password is required, the Username and Password screen appears, as shown in next step. If a user name and password is not required, skip next step.




**6.** Press Edit to enter a Username and a Password, and then press the Right Arrow button. The connection success dialog appears.

**7.** Press the check mark button to save the profile. The Default Connection dialog appears.

**8.** Press the check mark button to make your new profile the default connection. The NTRIP screen appears.

# PLANNING TOOL

The Planning Tool screen is informational only. It enables you to make decisions about farming applications based on GPS.

status and quality

The Sky Plot and Forecast items display when optimal GPS performance can be expected. To get to the Planning Tool screen:

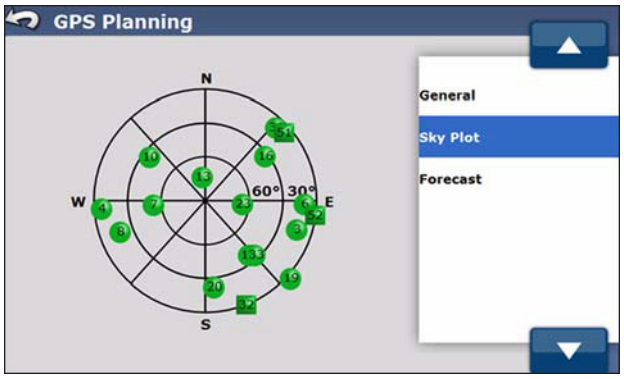
**1.** From the GPS screen, press the **Planning Tool** button. The GPS Planning screen appears.

**2.** There are three planning options available. Refer to the following sections for details.

## General

The General screen shows the vehicle position in latitude and longitude.

## Sky Plot




The Sky Plot chart display shows the Satellite positions. Satellites that are closer to the horizon typically have more errors due to atmospheric disturbances. Ideally, you would like to track six satellites 30º above the horizon.

• The inner circle represents 60 degrees above the horizon.

• The middle circle represents 30 degrees above the horizon.

• The outer most circle represents the horizon.

• Satellites in a square box are GLONASS satellites. GLONASS satellites are tracked and displayed only if the Feature Code is enabled in your ParaDyme system. See your dealer for information on Feature Codes. See the following note for more information on GLONASS satellites:

***Note:*** GLONASS is a satellite Navigation System operated by the Russian Government. It is an alternative and complementary system to the United States Global Positioning System. Tracking GLONASS satellites can be helpful in maintaining continuity of position is challenging scenarios such as working near a tree line. GLONASS tracking with the ParaDyme system requires a Feature Code.

## Forecast

The Forecast screen shows satellites availability for a specific date. Use the outer Left and Right Arrow buttons to change the date shown. Use the inner Left and Right Arrow buttons to change the hours shown.

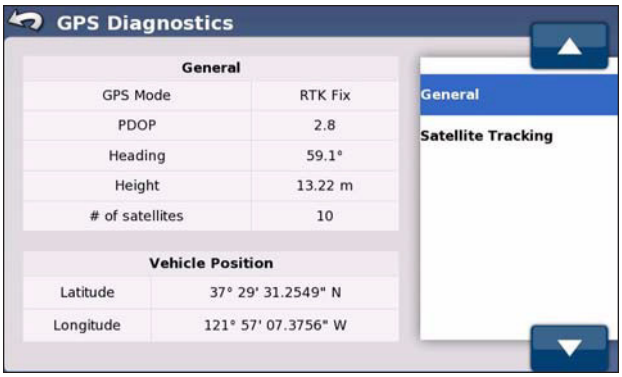
# GPS DIAGNOSTICS

The GPS Diagnostics screen provides information about the performance of the GPS system. To access the GPS Diagnostics screen:

**1.** Press the GPS Diagnostics on the GPS screen. The GPS Diagnostics screen appears.

**2.** There are two GPS diagnostics options available. Refer to the following sections for details.

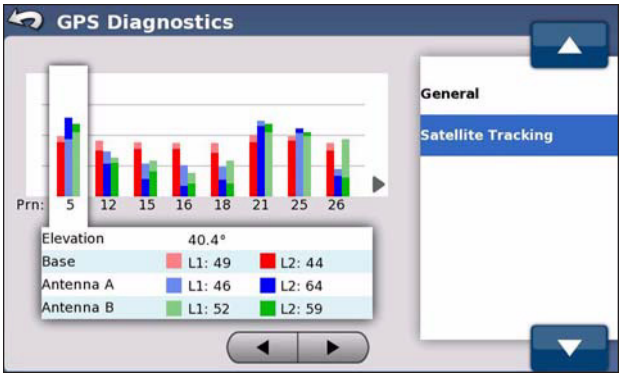
## General




The General screen displays the status of a number of operational parameters GPS Mode parameter displays the current GPS mode of the receiver.

- PDOP (Positional Dilution of Precision) is a measure of the strength of the satellite configuration. When visible GPS satellites are close together in the sky, the geometry is weak and the DOP value is high; when far apart, the geometry is strong and the DOP value is low. Thus a low DOP value represents a better GPS positional accuracy.
- Heading displays the heading of the vehicle in degrees.
  - You will not be able to autocalibrate or autosteer your vehicle before the Heading item displays a value.
- Height displays the vehicle's altitude above sea level.
- # of satellites displays the number of satellites being tracked by the receiver.
- Vehicle Position displays the latitude and longitude of the vehicle.

## Satellite Tracking


GPS Diagnostics
Prn: 5 12 15 16 18 21 25 26
Elevation 40.4°
Base L1: 49 L2: 44
Antenna A L1: 46 L2: 64
Antenna B L1: 52 L2: 59
General
Satellite Tracking

The Satellite Tracking screen displays the status of the tracked satellites. Use the left and right arrows to select a PRN and view the information specific to that PRN

The screen displays the signal to noise ratio (SNR) for each satellites being tracked for L1, L2 on the left antenna and L1 for the right antenna. The SNR is also depicted in a bar graph format. An overview of eight satellites can be displayed.

- Elevation: the elevation of the satellite above the horizon.
- Signal Strength: The strength of the signal for the selected satellite.
- Antenna A display: The light blue bar is L1 signal strength, the dark blue bar is L2 signal strength.
- Antenna B display: The light green bar is L1 signal strength, the dark green bar is L2 signal strength.
- Base Station display: The light red bar is L1 signal strength, and the dark red bar is L2 signal strength.

***Note:*** The Signal View window shows the number of satellites being tracked and their signal strength. Signal strength below 15 is marginal. A signal strength above 40 is good. It is necessary to track more than five satellites and it is preferable to track eight or more satellites.

# NMEA Out

The NMEA Out screen enables you to configure NMEA message output from the ParaDyme system for use with 3rd party precision agriculture applications. The ParaDyme system supports two NMEA ports: Port A and Port B.

***Note:*** You must refer to the documentation for your precision agriculture application to determine the correct NMEA message type and Baud rate. An incorrect setting may cause your system to function incorrectly.

To enable and configure NMEA messages:

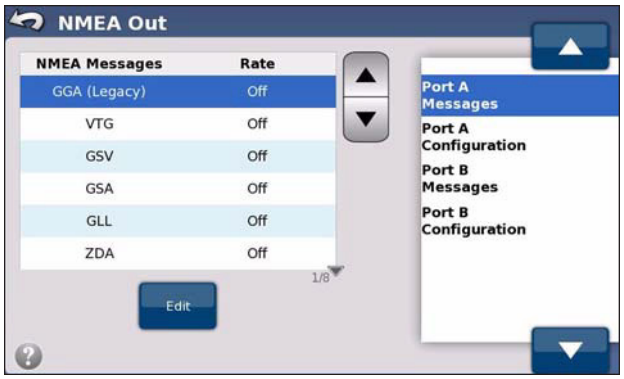
**1.** Press the **NMEA Out** button from the GPS menu. The NMEA Out screen appears.

**2.** There are two NMEA options available for each port. Refer to the following sections for details.

***Note:*** If you enable too many messages or enable too high of a message rate for the current Baud rate, an error message appears with instructions to change the configuration. Failure to do so will cause messages to be corrupted.

## Port A Messages

The Port A Messages option displays the status of available NMEA messages and enables you to edit the configurations. To configure NMEA messages:




**1.** Select the Port A Messages item from the scrolling list on the right, select the type of message you want to configure, and press the **Edit** button. The Available Rates screen appears.

**2.** Select a message rate (and version if using GGA messages) for the selected message type, and then press the check mark button. The NMEA Out screen appears and your changes are saved.

***Note:*** If your device uses GGA messages, use the Table 6-1 to choose the correct version

Table 6-1GGA Message Versions.GPS Status

| Value | Current Version | Legacy Version |
|---|---|---|
| 0 | Invalid Position | Invalid Position |

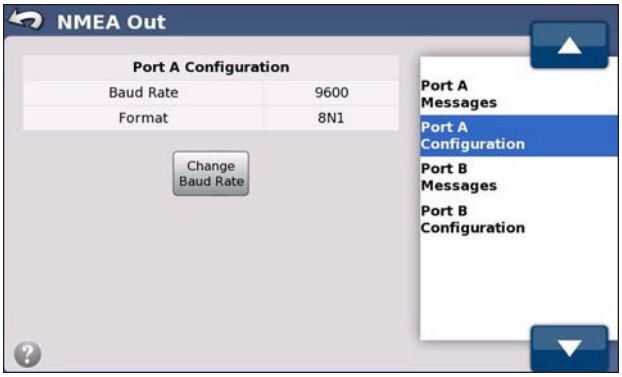
| Value | Current Version | Legacy Version |
|---|---|---|
| 1 | SPS Position | SPS Position |
| 2 | DGPS Position | Fixed Position (DGPS, OmniSTAR or RTK) |
| 3 | N/A | N/A |
| 4 | RTK Fixed Position | N/A |
| 5 | RTK Float Position | N/A |

## Port A Configuration

The Port A Configuration option enables you to configure the Baud Rate for your NMEA message output.

***Note:*** Changing the Baud Rate on the NMEA Out screen also changes the Baud Rate as displayed in the External Radio screen. See *"Configure SIM" on page 57*. Port A can be used simultaneously for the External Radio and NMEA Out, but both functions must use the same Baud Rate.

To configure the Baud rate:




**1.** Select the Port A Configuration item from the scrolling list on the right and press the **Change Baud Rate** button. The Available Baud Rates screen appears.

**2.** Select a baud rate and press the check mark button. The NMEA Out screen appears and your changes are saved.

## Port B Messages and Configuration

The procedures to enable and edit Port B messages is identical to those for Port A with the following exception: We strongly recommend that you reboot the ParaDyme system when you turn ON Port B messages for the first time and when you turn OFF all Port B messages.

***Note:*** Port B is used only for NMEA Out. It is not used for the External Radio.

# Using the Connections Menu

## Cell Modem

The Cell Modem screen functions differently depending on whether you are using the factory-supplied SIM or a customer-supplied SIM. The ParaDyme system automatically detects which type of SIM is installed and displays the correct screens and functions with either type of SIM, the cell modem is used to:

- enable initial system registration.

• provide Internet connectivity.

• enable remote diagnostics and troubleshooting.

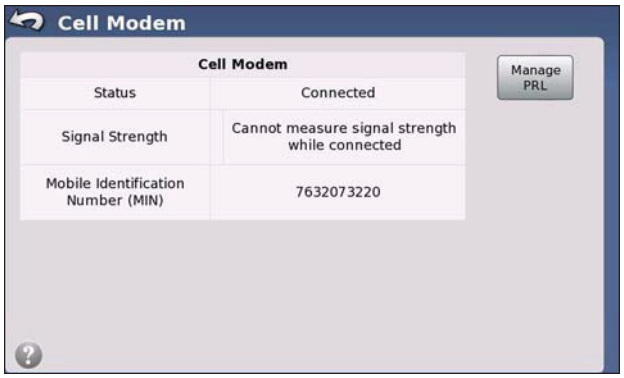
## Cell Modem Screens (Factory-supplied SIM)

The Cell Modem screen enables you to view information about your cell modem connection and manage your Preferred Roaming List.

To access the status and signal strength of the Cell modem connection:

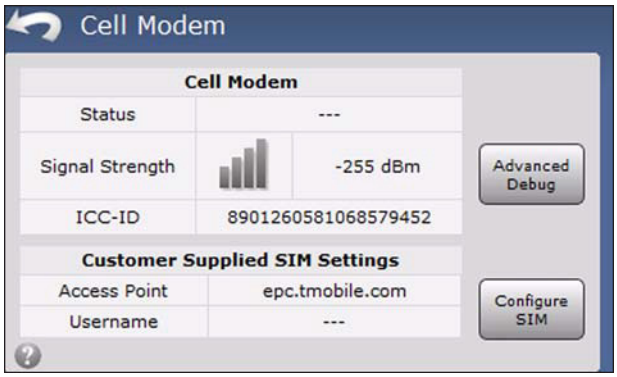
**1.** From the AutoSteer Setup screen, press the **Connections** button. The Connections menu appears.

**2.** Press the **Cell Modem** button. The Cell Modem screen appears. The information displayed on the Cell Modem screen depends on which cell modem is installed on your ParaDyme system. For systems configured for the United States, see next step. For systems configured for Europe and Australia, see Step 4.




**3.** ParaDyme systems configured for the United States display cell modem connection status and enable you to select Alternative PRLs. If your signal strength is low, press the **Manage PRL** button.

• Set connection priority to one of the other cell carries available in your area (which might have a better signal), by selecting one of the Alternative PRLs and then pressing the check mark button.




**4.** ParaDyme systems configured for Australia and Europe display cell modem connection status and your individual International Mobile Subscriber Identity (IMSI).

## Cell Modem Screens (Customer-supplied SIM)

The Cell Modem screen enables you to:

• configure your SIM.

• change your cell carrier.

• view information about your cell modem connection.

• view advanced Debug information for troubleshooting purposes.

• manage your Preferred Roaming List.

## Change Carrier

The ParaDyme system automatically selects the best carrier based on signal strength. However, you may want to manually select a cell carrier for optimum coverage in a particular location.

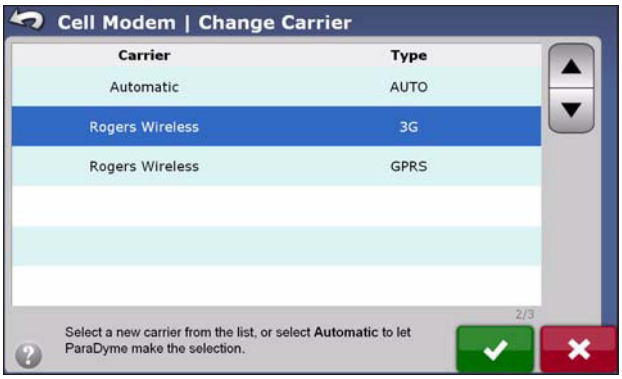
***Note:*** Selecting another carrier could result in roaming charges on your cell bill.

To change your carrier:

**1.** From the **AutoSteer Setup** screen, press the **Connections** button. The Connections menu appears.

**2.** Press the **Cell Modem** button. The Cell Modem screen appears.

**3.** Your status and signal strength are displayed at the top of the window. Press the **Change Carrier** button. The Change Carrier screen appears.




**4.** The Change Carrier screen displays the list of available carries. Select a new carrier from the list, or select Automatic to let ParaDyme make the selection. Next, press the check mark button. Your selection is made and the Cell Modem screen reappears.

***Note:*** It can take up to several minutes to detect and display all of the available carriers.

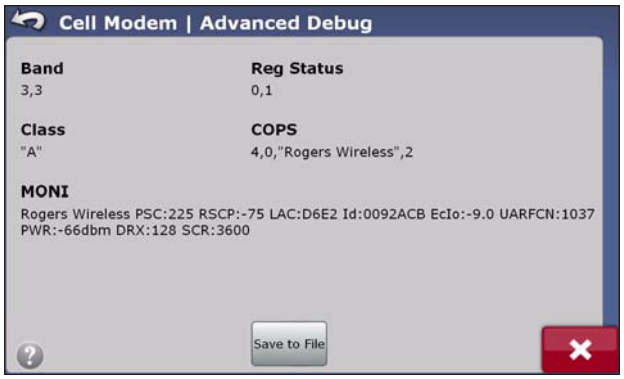
## Advanced Debug

The Advanced Debug screen displays information to help your dealer or authorized technician troubleshoot problems connecting your cell modem.To view or save advanced debug information:

**1.** From the **AutoSteer Setup** screen, press the **Connections** button. The Connections menu appears.

**2.** Press the **Cell Modem** button. The Cell Modem screen appears.

**3.** Press the **Advanced Debug** button. The Advanced Debug screen appears.




**4.** Advanced debug information is displayed. If your authorized dealer or technician directs you to do so, press the **Save to File** button to save the information to a log file. See *"Log File" on page 30* for instructions on saving and transferring a log file.

## Configure SIM

The Configure SIM screen is used for the initial configuration of your customer-supplied SIM. Contact your cell carrier for the Access Point Name (APN), Username, and Password.

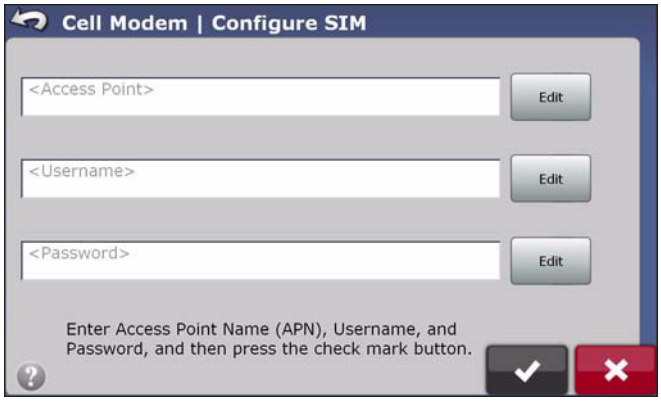
***Note:*** A Username and Password is not always required and can often be left blank.

To configure your SIM:

**1.** From the AutoSteer Setup screen, press the **Connections** button. The Connections menu appears.

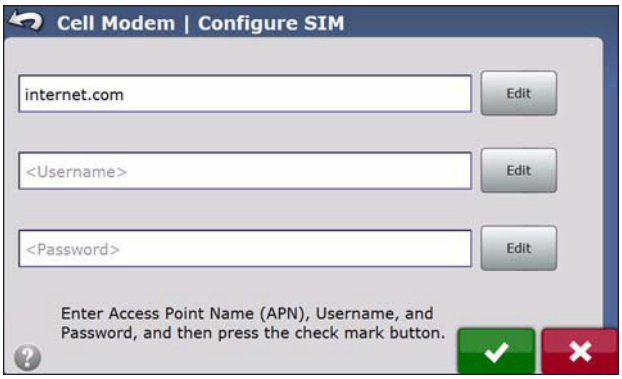
**2.** Press the **Cell Modem** button. The Cell Modem screen appears.

**3.** Press the **Configure SIM** button. The Configure SIM screen appears.




**4.** Press the **Edit** button next to the <Access Point> field. The Enter Your Access Point keyboard screen appears.

**5.** Enter the name of your access point, and then press the check mark button. The Configure SIM screen reappears.




**6.** Enter your Username and Password in the same manner. When finished, press the check mark button. The Cell Modem screen reappears and should show the Status as Connected. If not, check with your cell carrier to ensure you have entered the correct Access Point and/or Username and Password.

***Note:*** A Username and Password is not always required and can often be left blank.

External Radio.The External Radio screen enables you to set the Baud Rate (data transmission rate) of your radio connection. The external radio is a third party radio used for data transmission and reception.

***Note:*** Supported signal formats are INX, CMR+, RTCM 2.3 and RTCM V3.x.

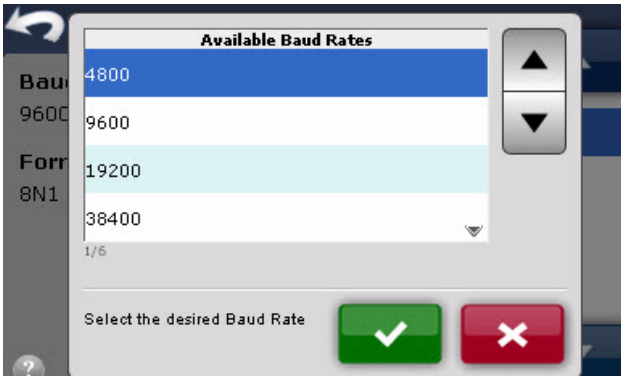
To set the radio Baud rate:

**1.** From the AutoSteer Setup screen, press the **Connections** button. The Connections menu appears.

**2.** From the Connections menu, press the **External Radio** button. The External Radio screen appears.

**3.** Select a port from the right side scrolling list and press the **Change Baud Rate** button. The Available Baud Rates scroll list appears.

***Note:*** Changing the Baud Rate on the External Radio screen also changes the Baud Rate as displayed in the NMEA Out screen. See *"NMEA Out" on page 53*. Note that Port A can be used simultaneously for the External Radio and NMEA Out, but both functions must use the same Baud Rate.




**4.** Select a baud rate and press the check mark button. The External Radio screen appears.

**5.** Press Apply to activate your changes.

# WiFi

The WiFi screen enables you to establish a wireless connection between the ParaDyme system and a laptop PC. Firmware upgrades can be accomplished over the WiFi connection. See the *"Upgrade Via WiFi Using a PC" on page 36* for the upgrade procedure. You can enable/disable the WiFi connection, view the encryption method and assigned ESSID in the WiFi screen.

***Note:*** The WiFi connection is normally disabled. You must go to the WiFi screen and enable it. WiFi stays enabled until you either power down the ParaDyme Roof Module, or press the **Disable** button.

***Note:*** *The encryption method is automatically implemented. The ESSID is assigned with the 4 last digits of the ParaDyme serial number (ESSID) as shown in the WiFi status screen in Step 3.*

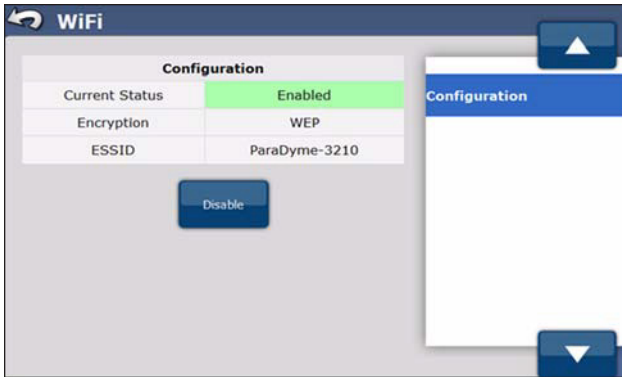
To enable/disable the WiFi connection:

**1.** From the AutoSteer Setup screen, press the **Connections** button. The Connections menu appears.

**2.** From the Connections menu, press the **WiFi** button. The WiFi screen appears.

**3.** Press the **Enable** button to activate the WiFi connection. The Available WiFi Configuration scroll list appears.

***Note:*** The WiFi connection is now enabled, showing the Encryption method and the ESSID.



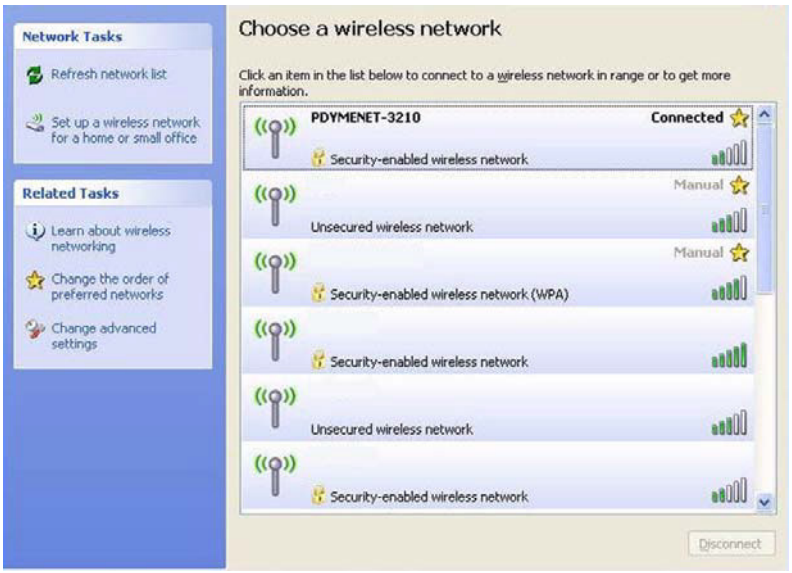

**4.** Proceed to the Configuring PC Settings for WiFi Connection section to complete the WiFi connection with the Paradyme system.

## Configuring PC Settings for WiFi Connection

***Note:*** The WiFi connection is used exclusively for performing software upgrades. *"Software Upgrade" on page 33* for software upgrade information.

**1.** Access the Add a Wireless Connection screen on your PC.

***Note:*** The wireless network name, or ESSID is PDYMENET-nnnn where nnnn are the last 4 digits of the ParaDyme Roof module serial number.


Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
PDYMENET-3210
Connected
Security-enabled wireless network
Manual
Unsecured wireless network
Manual
Security-enabled wireless network (WPA)
Security-enabled wireless network
Unsecured wireless network
Security-enabled wireless network
Disconnect

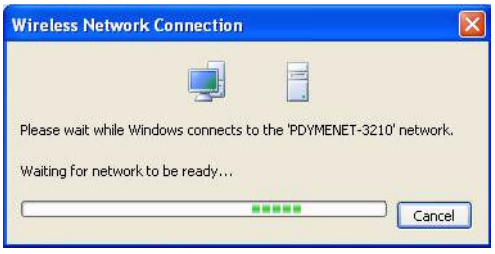
**2.** Click on the ParaDyme system chosen for connection.

***Note:*** There may be more than one ParaDyme unit in your vicinity.

Wireless Network Connection
The network 'PDYMENET-3210' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

**3.** Enter the Network Key for the chosen ParaDyme system and press the **Connect** button.

***Note:*** The network key is: wifimescotty1 (all lower case).


Wireless Network Connection
Please wait while Windows connects to the 'PDYMENET-3210' network.
Waiting for network to be ready...
Cancel

**4.** Wait while your PC connects to the ParaDyme system.

***Note:*** The connection to the ParaDyme network is now established. You can now upload software to the ParaDyme system. See *"Upgrade Via WiFi Using a PC" on page 36* for WiFi software upgrade instructions.

# USING THE MY ACCOUNT MENU

## OVERVIEW

The My Account menu enables you to initiate remote technical support. It also enables you to configure and monitor your account parameters. The My Account functions are:

- The **Call Support** button enables you to call technical support from the display.
- The **Details** button gives access to information about system components.
- The **Feature Code** button enables you to set the feature code and enable purchased system features.

## CALL SUPPORT

***Note:*** The Call Support service is only available to users that subscribe to a service plan.

***Note:*** *he availability, quality, integrity, and reliability of the cellular network is not guaranteed.*

When you need technical support for the ParaDyme System, use the Call Support feature. The remote service process generally proceeds as follows:

**1.** Press the **Call Support** button. The Call Support feature enables you to send a callback number to your dealer service representative.

**2.** Your dealer service representative is notified of your remote service request.

**3.** Your dealer-qualified service technician is then able to remotely access your screens to troubleshoot the system.

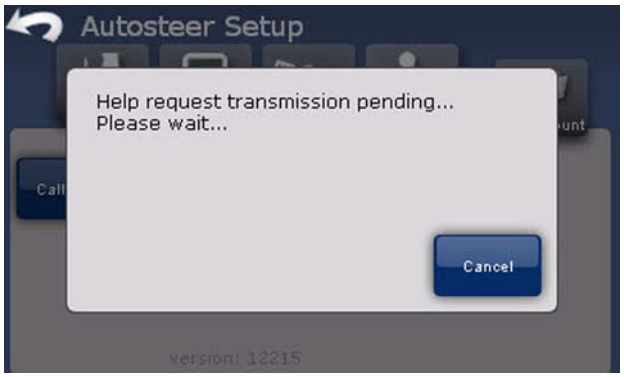
To send a call back number:

**1.** From the AutoSteer Setup screen, press the **My Account** button. The My Account menu appears. Press the **Call Support** button. The system performs internal checks and the phone number keypad appears.

**2.** Enter a call back number and press the check mark button. If the call back function is operational for your system, a sequence of messages appears.

***Note:*** The system only enables one call per fifteen minutes.

***Note:*** While your request is being processed, some conditions could make it fail. If you see a failure message, try again to send a call support request.




**3.** The Help request transmission pending dialog displays.

**4.** The Help request transmission successful dialog displays.

**5.** Press the check mark button to return to the My Account menu.

## Details

The Details screen provides information about the following system components:

- Roof Module
- Peripherals
- ECU
- Display

The listed information may be required by support personnel when you place a help request via the Call Support function. To view details about the system:

**1.** From the My Account screen, press the **Details** button. The **Details** menu appears.

**2.** Using the up and down arrows on the scrolling list, select the item for which you want to view details. The information about the selected item appears. The following screen is typical.

## Feature Code

The Feature Code screen displays all the features that can be activated within the ParaDyme application. It enables you to enter the feature code for the features you purchased. The text box header shows the feature name, the expiration date and the status. The expiration date can show either: Expired (if the feature code has already expired), Never (if it is activated forever) or the expiration date if it is a time limited feature code.To activate a feature:

**1.** From the My Account menu, press the **Feature Code** button. The Feature Code screen appears.

**2.** Using the up and down arrows, select an item you wish to activate, and then press the **Edit** button.

**3.** The keyboard appears.

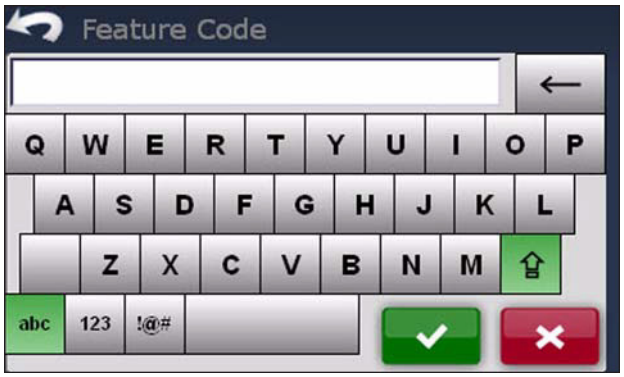
• The status column shows an icon to quickly identify the status of the feature as follows:

- check mark: The feature is enabled.

- Exclamation point: The feature code has expired. The feature is disabled.

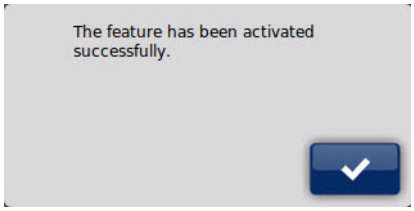
- X mark: The feature has never been activated.

***Note:*** If the Feature Code is activated and not expired, the **Edit** button is not accessible.




**4.** Enter the Feature Code to enable a feature. Using the up and down arrows, select a feature and press Edit. The feature code keyboard screen appears.

***Note:*** A Feature Code consists of 16 alpha-numerical characters. The keyboard enables only numbers and capital letters to be used.




**5.** If the code is valid, the feature success screen appears. Press the check mark button to return to the My Account menu